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*Few Birds*

*Townsend Glover*

# ILLUSTRATIONS

OF

## NORTH AMERICAN ENTOMOLOGY,

(UNITED STATES AND CANADA,)

BY TOWNSEND GLOVER, WASHINGTON, D. C.

# ORTHOPTERA.

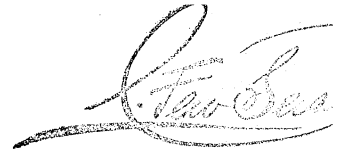
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List of Species figured.....	9
List of Desiderata and Errata.....	11

WASHINGTON, D. C.:

J. S. TOMLINSON, PRINTER AND BOOKSELLER,  
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## INTRODUCTION.

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It is not the design of the author in the following work, to present scientific or highly-finished engravings of North American Orthoptera, but merely figures, giving a general idea of their form, size, and color, to aid the young Entomologist in the identification of species. At the same time reference is made to their names in MR. SAMUEL H. SCUDDER'S "Catalogue of Orthoptera of North America," published by the Smithsonian Institution, Washington, 1868, and to his "Materials for a Monograph of the North American Orthoptera," published in "Proceedings Boston Society Natural History, 1862," where many original descriptions as well as the names of their authors may be found. The REV. CYRUS THOMAS has described many new species in the "Proceedings of the Academy of Natural Sciences," Philadelphia, 1870, and in the "Geological Surveys of Territories, made by DR. F. V. HAYDEN," 1870 and 1871.

In some cases it has been found necessary to figure European insects, where no specimens of the allied genera or species could be procured in the United States. In all such instances, the figures will be marked as European, and due credit given to the original work from which they were taken.

In the arrangement of the list accompanying each plate, the first name given is always that of the latest and best authority; and the last, the name of the genus in which it was formerly placed by its first discoverer. As the works of SAY and HARRIS are most widely disseminated in the Northern and Eastern states, their names will also be given as synonyms when deemed necessary.

Some of the insects figured have been transferred from other orders to the Orthoptera, for the reasons given below, namely:—The *Thripidae* were formerly placed by WESTWOOD by themselves in *Thysanoptera*, and more lately by DR. PACKARD among the *Hemiptera*: but as WESTWOOD distinctly says that "as they possess two setiform *mandibles*, and the disposition of the other parts of the mouth are those of a *real mandibulated insect*," they cannot properly be retained amongst the haustellate Hemiptera, and are therefore placed provisionally amongst the Orthoptera. *Podura* and its allies also possess small *mandibles* with minute teeth, and are not mentioned by MR. SCUDDER in his list of Orthoptera; but as LEUNIS in his "Synopsis

der drei Naturreiche" places them under the head of "Division B, false or wingless Orthoptera," they have also been classed with the Orthoptera until a better place can be found for them. The *Mallophaga* or bird lice also possess *distinct jaws* instead of a sucking tube, (Verrill,) and have small and hook-like mandibles. Such being the case, they cannot be placed with the true *Pediculina* which are decidedly haustellate, and are, therefore, also placed provisionally in Division B, or Wingless Orthoptera of LEUNIS.

The text to accompany these plates will consist of merely the latest name, and some of the principal synonyms of the insects figured, with a concise history of their habits as far as known; their food, habitat; the best remedies used to destroy them if injurious, and the name of the donor, with a very short description of the principal families, or genera, and in some instances a brief notice of the principal difference, or any striking peculiarity, which distinguishes closely allied species from each other, so as to call attention to that particularly in the comparison or arrangement of specimens in a cabinet. There will also be a full alphabetical list of the principal vegetable and animal substances injured by any species at the end of the volume, for the use of farmers who do not understand anything about Entomology, but who can thus be enabled to identify any particular insect by referring to the plant on which it is generally found feeding.

The thanks of the author are due to MR. S. I. SMITH, of Yale College, New Haven, Connecticut; MR. CHAS. R. DODGE, of Washington, D. C.; MR. C. V. RILEY, of St. Louis, Mo. for specimens kindly given from their own private collections, and from which the original drawings were prepared. Especial acknowledgment is due to the REV. CYRUS THOMAS, of Illinois, and MR. PHILIP R. UHLER, of Baltimore, Md., not only for type specimens, but also for their valuable aid in comparing them with others, and in determining doubtful species. It may also be well to observe, that the original type specimens have been carefully preserved in the Entomological cabinet of the Museum of the Department of Agriculture in Washington, for future reference by any Entomologist who may wish to work up or study the Orthopterous insects of the United States and Canada.

This small pioneer edition of fifty copies is intended for distribution to Entomologists and Entomological Societies *only*. The plates have been etched and the text written either after or before the hours of official duty; and it is also published at the expense of the author, and not by the Department of Agriculture. If it should be approved of, it is proposed to publish yearly, or from time to time additional plates &c. of the same size and in similar style of any new or rare Orthoptera which may be added to our list by the exploring expeditions, or by private enterprise, as likewise eventually to illustrate all the other orders of insects in a similar manner.

# INTRODUCTION.

V

The following table of the principal families of Orthoptera has been temporarily arranged for the use of young Entomologists who wish to classify their collections. The name of the family to which each insect belongs in SCUDDER'S Catalogue, &c. will be placed (in italics) as the end of the list of names and synonyms appended to each plate.

Division A. True Orthoptera.	{	Gryllides. Scudder.	}	Ex. <i>Æcanthus</i> , or flower cricket. <i>Gryllus</i> , common cricket, and <i>Gryllotalpa</i> or mole cricket.	
		<i>Achetidae</i> ( <i>Leach</i> ) of <i>Westwood</i> .			
		Locustariæ. Scudd.			
		<i>Gryllidae</i> .. ( <i>Leach</i> ) <i>Westw.</i>			
		Phaneroptera, Phylloptera, Microcentrum and Cyrtophyllus. (Katydids.) <i>Xyphidium</i> ; <i>Orchelimum</i> , &c.; slender meadow grasshoppers or Katydids; &c.; ( <i>Ceuthophilus</i> ), large wingless cricket or grasshopper of Utah, and <i>Hadenæcus</i> , cave wingless cricket.			
Division B. False Orthoptera.	{	Acrydii Scudd.	}	<i>Acridium</i> , <i>Caloptenus</i> , <i>Ædipoda</i> , <i>Stenobothrus</i> , &c.; true grasshoppers; and <i>Tettix</i> , grouse locusts.	
		<i>Locustidae</i> . ( <i>Leach</i> ) <i>Westw.</i>			
		Phasmida. Scudd.			
		<i>Phasmidae</i> . <i>Westw.</i>			
		Spectres. Walking sticks.			
Division B. False Orthoptera.	{	Mantides. Scudd.	}	Rear horses or soothsayers.	
		<i>Mantidae</i> . <i>Westw.</i>			
		Blattariæ. Scudd.			
		<i>Blattidae</i> . ( <i>Stephens</i> ) <i>Westw.</i>			
		Cockroaches.			
Division B. False Orthoptera.	{	Forficulariæ. Scudd.	}	Earwigs.	
		<i>Forficulidae</i> . ( <i>Stephens</i> ) <i>Westw.</i>			
		Fringed } Thripidae. Thrips and allies, { <i>formerly order Thysanoptera of West-</i> wings. } <i>wood</i> .			
		{			Poduridæ. Spring and bristle tails, { <i>formerly order Thysanura,</i> <i>Burm., and lately in Neurop-</i> <i>tera. Packard.</i>
		Orthoptera.			{

The False Orthoptera have been put after the True Orthoptera, so that they may either be left out altogether, or removed into other orders if found desirable.





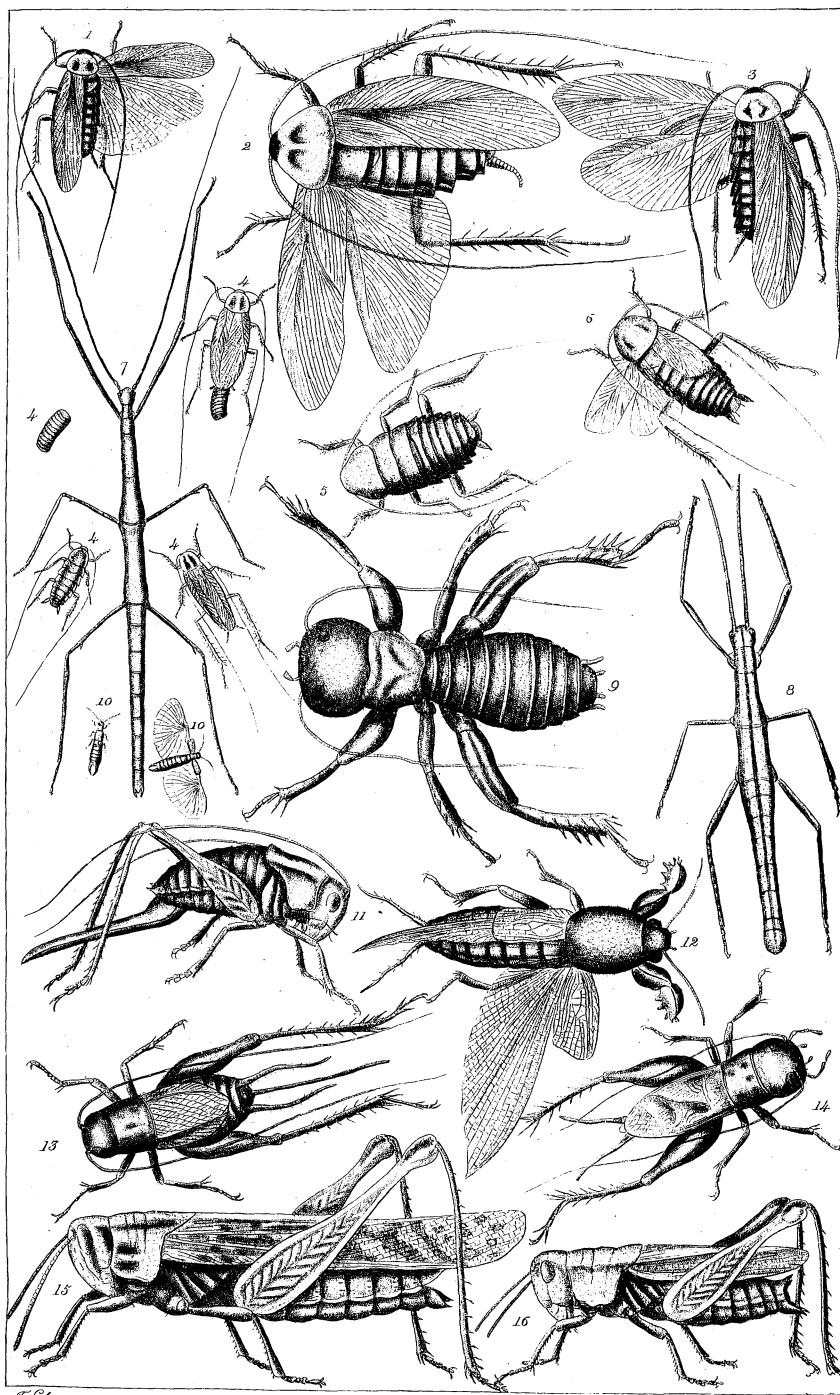
## PLATE I.---ORTHOPTERA.

fig. 1	{ Platamodes (Scudd.) pennsylvanica. Scudd. } Blatta (Linn.) " De Geer. }	*Scudd. Cat. 70. Scudd. Mono. 417. <i>Blattariac.</i>			
2	{ Periplaneta (Burm.) americana. Burm. } Blatta (Linn.) " Linn. }	" 62. " 416. "			
3	{ Platamodes (Scudd.) pennsylvanica. Scudd. } Blatta (Linn.) " De Geer. }	" 70. " 417. "			
4	{ Ectobia (Westw.) germanica. Stephens. } Blatta (Linn.) " Aude & Brulle. }	" 14. " 417. "			
5	{ Stylopyga (Fischer) orientalis. Fisch. deW. } Blatta (Linn.) " Linn. }	" 78. " 416. "			
6	" " " ♀ "	" 78. " 416. "			
7	{ Diapheromera (Gray) femorata. Scudd. } Bacteria (Latr.) Sayii. Burm. } Bacunculus (Burm.) femoratus. Uhler. } Spectrum (Serv.) femoratum. Say. }	" 11. " 0. <i>Phasmida.</i>			
8	{ Anisomorpha (Scudd.) buprestoides. Gray. } Spectrum (Serv.) bivittatum. Say. } Pasma (Licht.) buprestoides. Stoll. }	" 9. " 0. "			
9	Stenopelmatus (Burm.) talpa. ♂ Burm.	" 78. " 0. <i>Locustariac.</i>			
10	Labia (Leach) minuta. Scudd.	" 43. " 415. <i>Forficulariac.</i>			
11	Thamnotrizon (Fischer) dorsale. ♀ Burm.	" 0. " 0. <i>Locustariac.</i>			
12	Gryllotalpa (Latr.) longipennis. ♂ Scudd.	" 29. " 426. <i>Gryllides.</i>			
13	{ Gryllus (Linn.) pennsylvanicus. ♀ Burm. } Acheta (Fab.) pennsylvanica Uhler. }	" 36. " 428. "			
14	" " " ♂ "	" 36. " 428. "			
15	{ Acridium (Geoff.) americanum. ♀ Scudd. } Cyrtacanthacris (Walk.) " Walk. } Gryllus (Linn.) " Drury. }	" 4. " 466. <i>Acrydii.</i>			
16	{ Caloptenus (Serv.) bivittatus. ♀ Uhler. } " " femoratus. Burm. } Gryllus (Linn.) bivittatus. Say. }	" 20. " 465. "			

\*Scudder's Catalogue and Monograph, see Introduction.



II







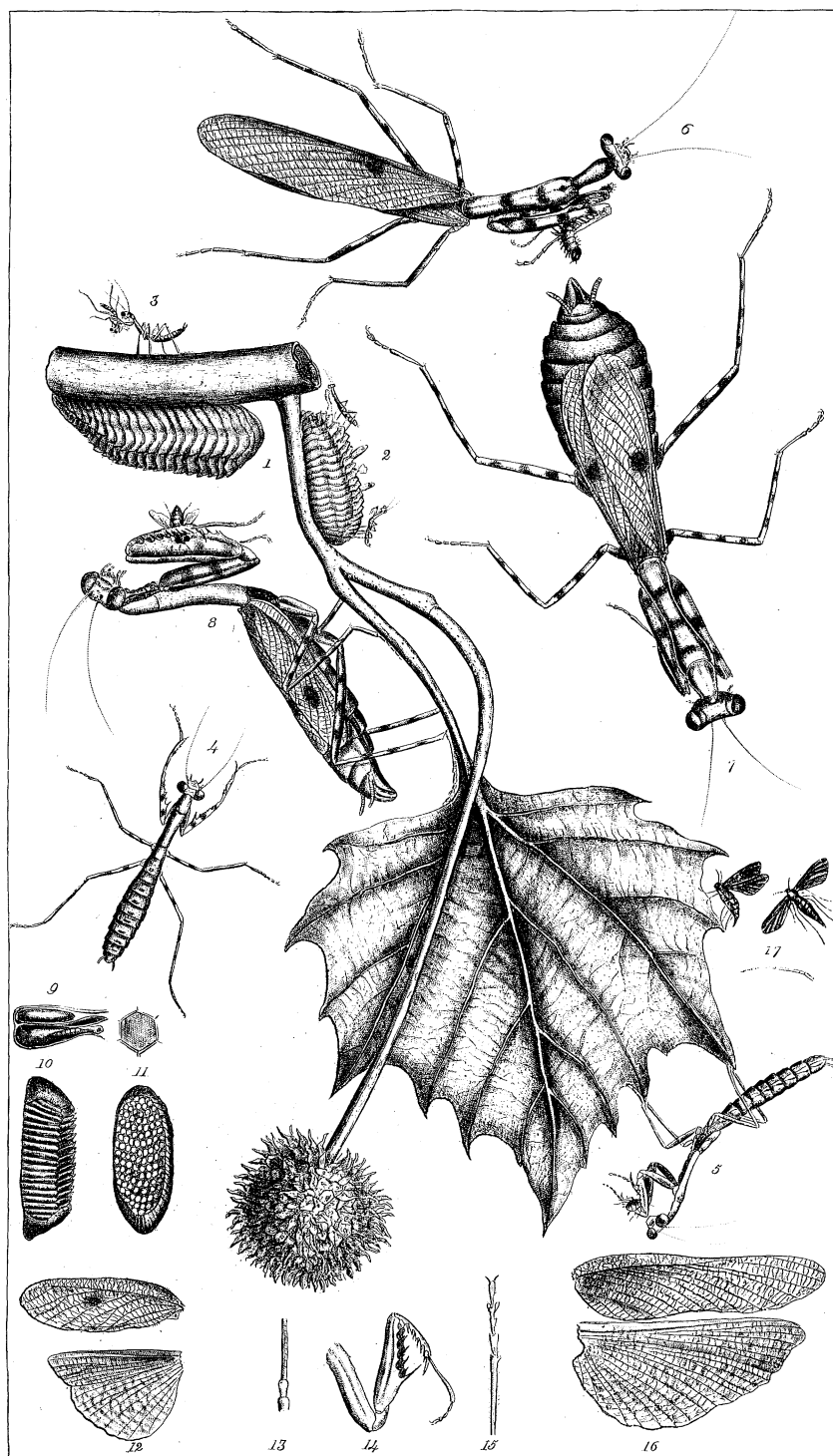
## PLATE II.---ORTHOPTERA.

MANTIS CAROLINA: (Linn.) Scudder's Catalogue, p. 48. *Phasmida*.

- Fig. 1 Egg case.  
 2 Egg case with young escaping.  
 3 Young Mantis devouring another.  
 4 Young Mantis in the Nymph state. (Gray variety.)  
 5 Young " " " " (Green variety.)  
 6 Imago. Mantis carolina. (Linn.) ♂  
 7 " " " ♀ (Gray var.)  
 8 " " " ♀ (Green var.)  
 9 Egg case cut longitudinally to exhibit structure.  
 10 " " " " "  
 11 " " transversely " "  
 12 Wings of ♂  
 13, 14, 15 Base of Antennae, fore legs and tarsi.  
 16 Wings of ♀  
 \*17 Sciara?

\*This fly was popularly believed to be connected with the yellow fever which raged in Norfolk, Va. in 1855. They were exceedingly numerous there during the whole time the yellow fever was prevalent in that year, and hence were known in Norfolk and its vicinity as "yellow fever flies." (See Sciara in Diptera.)

# II



J. Hoyer

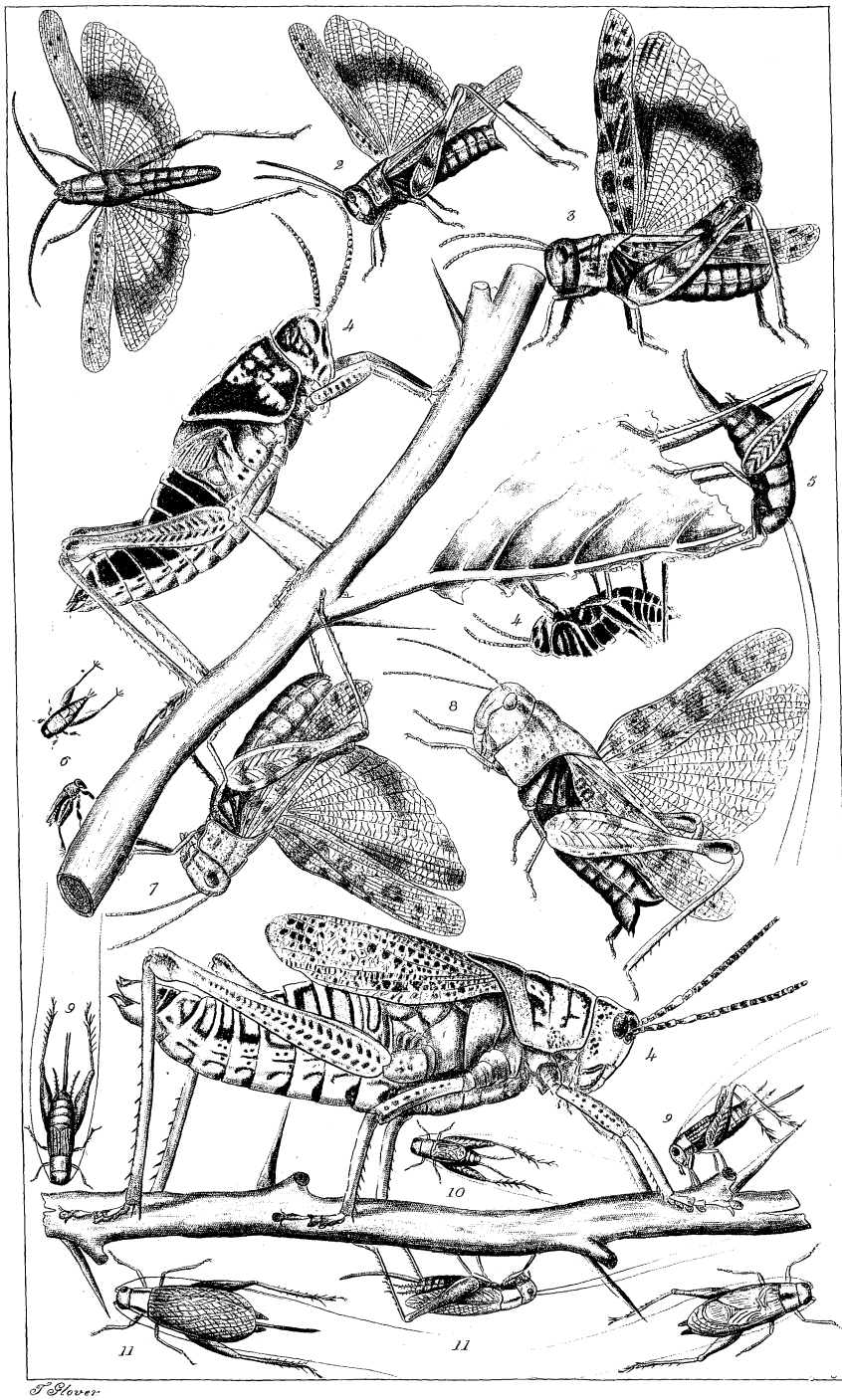






PLATE III.---ORTHOPTERA.

Fig. 1	{ Ædipoda (Latr.) eucerata. Uhler. Locusta (Linn.) " Harr. }	Scudd. Cat. 56. Scudd. Mono. 472. <i>Acrydii</i> .
2	" " " ♀ "	" 56. " 472. "
3	{ Ædipoda (Latr.) discoidea. ♂ Serv. Acridium (Geoff.) tuberculatum. Pal de Beauv. }	" 56. " 469. "
4	{ Romalea (Serv.) microptera. ♀ Serv. Gryllus (Fab.) centurio. Burm. }	" 74. " 0. "
5	{ Ceuthophilus (Scudd.) maculatus. ♀ Scudd. Rhaphidophora (Charp.) maculata. Harr. Phalangopsis (Burm. " Harr. Ephippigera (Serv.) " Say. MSS. }	" 21. " 434. <i>Locustariæ</i> .
6	Tridactylus (Oliv.) terminalis. Scudd.	" 82. " 425. <i>Gryllides</i> .
7	{ Ædipoda (Latr.) discoidea. ♀ Serv. Acridium (Geoff.) tuberculatum. Pal de Beauv. }	" 56. " 468. <i>Acrydii</i> .
8	Ædipoda (Latr.) corallipes. ♀ Hald.	" 56. " 0. "
9	{ Nemobius (Serv.) vittatus. ♀ Scudd. Acheta (Fab.) servilis. Harr. and Say MSS. }	" 54. " 430. <i>Gryllides</i> .
10	" " " ♂ " "	" 54. " 430. "
11	Orocharis (Uhler.) saltator. ♀ Uhler.	" 58. " 0. "
12	" " " ♂ " "	" 58. " 0. "







## PLATE IV.---ORTHOPTERA.

Fig. 1	$\left\{ \begin{array}{l} \text{Ecanthus (Serv.) niveus. } \text{♀} \text{ De Geer.} \\ \text{“ “ fasciatus. Fitch.} \\ \text{Gryllus (Linn.) niveus. Oliv.} \end{array} \right\}$	Scudd. Cat. 55. Scudd. Mono. 431. <i>Gryllides</i> .
2	“ “ “ ♂ “	“ 55. “ 431. “
3	$\left\{ \begin{array}{l} \text{Microcentrum (Scudd.) retinervis. } \text{♀} \\ \text{Scudd.} \\ \text{Phylloptera (Serv.) “ Burm.} \end{array} \right\}$	“ 53. “ 436. <i>Locustariae</i> .
4	$\left\{ \begin{array}{l} \text{Phylloptera (Serv.) oblongifolia } \text{♀} \\ \text{Burm.} \\ \text{Locusta (Linn.) “ De Geer.} \end{array} \right\}$	“ 68. “ 445. “
5	$\left\{ \begin{array}{l} \text{Ecanthus (Serv.) bipunctatus. } \text{♀} \\ \text{De Geer.} \\ \text{Ecanthus “ punctulatus. Fitch.} \\ \text{Gryllus (Linn.) bipunctatus. De Geer.} \end{array} \right\}$	“ 55. “ 432. <i>Gryllides</i> .
6	“ “ “ ♀ “	“ 55. “ 432. “
7	$\left\{ \begin{array}{l} \text{Orchelimum (Serv.) vulgare. } \text{♀} \text{ Harr.} \\ \text{Pterophylla (Kirby MSS.) agilis. Harr.} \end{array} \right\}$	“ 59. “ 452. <i>Locustariae</i> .
8	“ “ “ ♂ “	“ 59. “ 452. “
9	$\left\{ \begin{array}{l} \text{Mesops (Serv.) Wyomingensis. Thomas.} \\ \text{Opomala (Serv. emend.) Wyomingensis.} \\ \text{Thomas.} \end{array} \right\}$	Proceedings Academy Natural Science, Philadelphia, 1871. <i>Acrydii</i> .
10	$\left\{ \begin{array}{l} \text{Xyphidium (Serv.) fasciatum. } \text{♂} \text{ Serv.} \\ \text{Pterophylla (Kirby MSS.) fasciata. Harr.} \\ \text{Orchelimum (Serv.) gracile. Harr.} \\ \text{Locusta (Linn.) fasciata. De Geer.} \end{array} \right\}$	Scudd. Cat. 84. Scudd. Mono. 451. <i>Locustariae</i> .
11	Xyphidium (Serv.) brevipennis. ♀ Scudd.	“ 84. “ 451. “
12	$\left\{ \begin{array}{l} \text{Conocephalus (Thunb.) ensiger. } \text{♀} \text{ Harr.} \\ \text{Locusta (Linn.) acuminata. Stoll.} \end{array} \right\}$	“ 22. “ 449. “
13	Stenobothrus (Fisch.) admirabilis. Uhler.	“ 77. “ 0. <i>Acrydii</i> .
14	$\left\{ \begin{array}{l} \text{Pyrgomorpha (Fisch.) brevicornis. } \text{♀} \\ \text{Thomas.} \\ \text{Opomala (Serv. emend.) “} \\ \text{Truxalis (Linn.) “ Fab.} \\ \text{Gryllus (Linn.) (Acridium Fab.) brevi-} \\ \text{cornis. Linn.} \end{array} \right\}$	“ 83. “ 0. “
15	$\left\{ \begin{array}{l} \text{Cyrtophyllus (Burm.) concavus. } \text{♂} \text{ Scudd.} \\ \text{Platyphyllum (Serv.) concavum. Harr.} \\ \text{Pterophylla (Kirby MSS.) concava. Say} \\ \text{and Harr.} \end{array} \right\}$	“ 24. “ 444. <i>Locustariae</i> .
16	$\left\{ \begin{array}{l} \text{Egg and young of Microcentrum retin-} \\ \text{ervis. Scudd. See Fig. 3.} \end{array} \right\}$	“ 53. “ 436. “

# IV



J. Glover



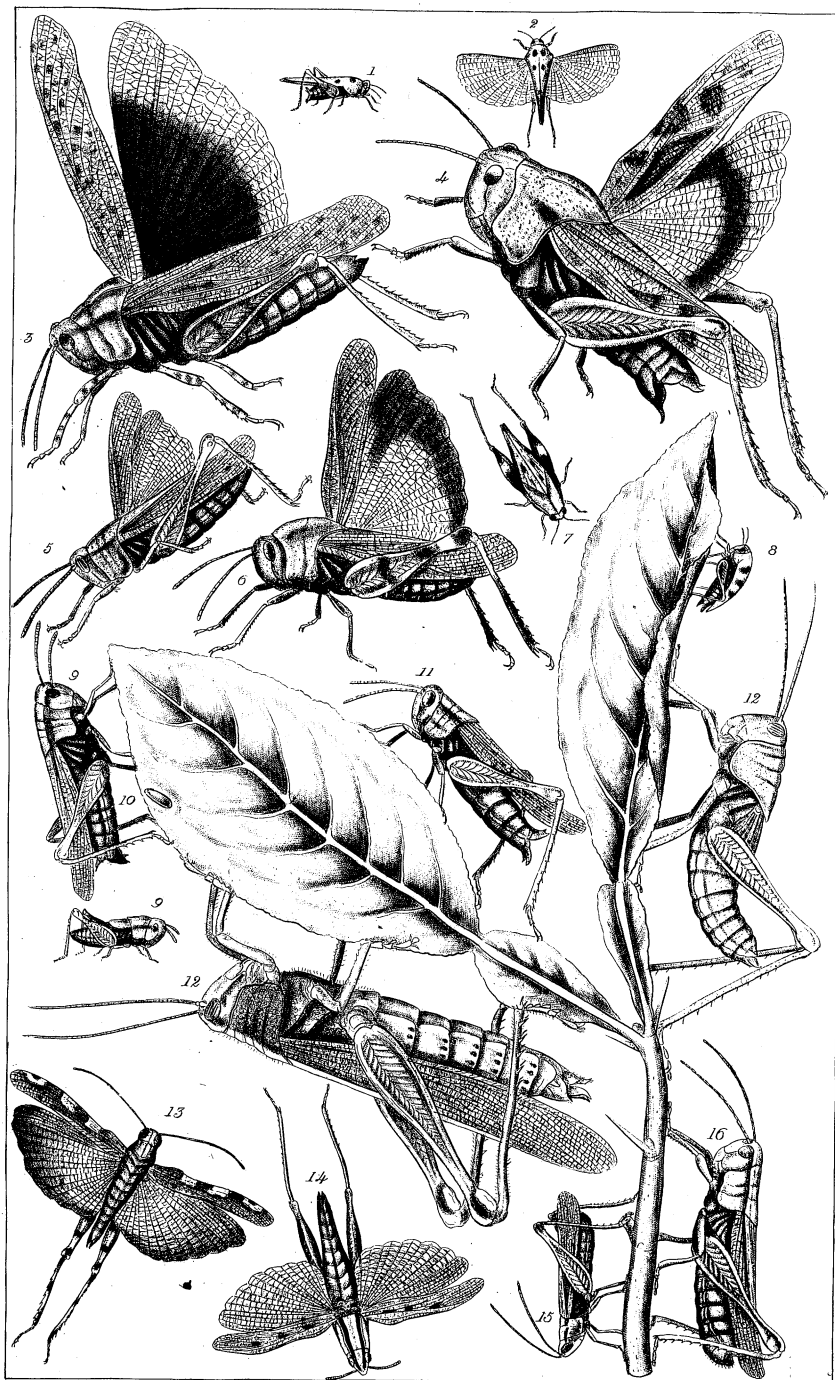




# PLATE V.---ORTHOPTERA.

Fig. 1	<div> <div> <div>*Tettix (Latr. emend.) ornata. Scudd.</div> <div>Tetrix (Latr.) quadrimaculata. ♀ Harr.</div> <div>Var. figured.</div> <div>Tetrix (Latr.) bilineatus. Harr. Var.</div> <div>" " dorsalis. " "</div> <div>" " sordida. " "</div> <div>" " arenosa. Burm. "</div> <div>Acridium (Geoff.) ornatum. Say</div> </div> </div>	Scudd. Cat. 79. Scudd. Mono. 474. <i>Acrydii</i> .
2	" " " " " " " "	" 79. " 474. "
3	<div> <div>Ædipoda (Latr.) carolina. Burm.</div> <div>Locusta (Linn.) caroliniana. Catesby.</div> <div>Locusta (Linn.) corolina. Linn. &amp; Harr.</div> </div>	" 56. " 468. "
4	<div> <div>Ædipoda (Latr.) phoenicoptera. ♀</div> <div>Germ.</div> <div>Locusta (Linn.) corallina. Harr.</div> </div>	" 57. " 468. "
5	<div> <div>Acridium (Geoff.) rubiginosum. ♀ Harr.</div> <div>MSS.</div> <div>Acridium (Geoff.) damnificum. Sauss.</div> </div>	" 7. " 467. "
6	<div> <div>Ædipoda (Latr.) sulphurea. ♂ Burm.</div> <div>Gryllus (Fab.) " Fab.</div> <div>Locusta (Linn.) " Linn &amp; Harr.</div> </div>	" 47. " 470. "
7	<div> <div>Tettix (Latr. emend.) lateralis. Scudd.</div> <div>Tetrix (Latr.) " Harr.</div> <div>Acrydium (Geoff.) " Say.</div> </div>	" 79. " 477. "
8	<div> <div>Batrachidea (Serv.) cristata. Scudd. (Var.)</div> <div>Tetrix (Latr.) " Harr. MSS.</div> </div>	" 11. " 478. "
9	<div> <div>Tragocephala (Harr.) viridifasciata. ♀</div> <div>Harr.</div> <div>Tragocephala (Harr.) radiata. Harr.</div> <div>Ædipoda (Latr.) virginiana. Burm.</div> <div>Acridium (Geoff.) virginianum. Oliv.</div> </div>	" 82. " 461. "
10	<div> <div>Egg of Phaneroptera (Serv.) curvicauda.</div> <div>Serv.</div> <div>Phaneroptera (Serv.) angustifolia. Harr.</div> <div>Locusta (Linn.) curvicauda. De Geer.</div> </div>	" 65. " 448. <i>Locustariae</i> .
11	<div> <div>Caloptenus (Serv.) femur rubrum. ♀</div> <div>Burm.</div> <div>Acridium (Geoff.) femur rubrum. Harr.</div> </div>	" 20. " 464. <i>Acrydii</i> .
12	<div> <div>Acridium (Geoff.) obscurum. ♀ Burm.</div> <div>Gryllus (Fab.)</div> </div>	" 6. " 467. "
13	<div> <div>Ædipoda (Latr.) eucrata. Uhler in</div> <div>Harr. { Florida variety.</div> <div>Locusta (Linn.) Harr.</div> </div>	" 56. " 0. "
14	<div> <div>Stenobothrus (Fischer.) maculipennis. ♀</div> <div>Scudd.</div> </div>	" 77. " 458. "
15	<div> <div>Stenobothrus (Fischer.) longipennis. ♂</div> <div>Scudd.</div> </div>	" 0. " 457. "
16	<div> <div>Caloptenus (Serv.) bivittatus. ♂ Uhler.</div> <div>" femoratus. Burm.</div> <div>Gryllus (Linn.) bivittatus. Say.</div> </div>	" 20. " 465. "

\*All these so-called species of Harris, &c., are said (by Scudder) to be merely varieties of *Tettix ornata*, (Scudd.) (*Acridium ornatum*, Say.) and that the *T. ornata* of Harris is the *T. granulatus* of Scudder's monograph, p. 414.



J. Flower

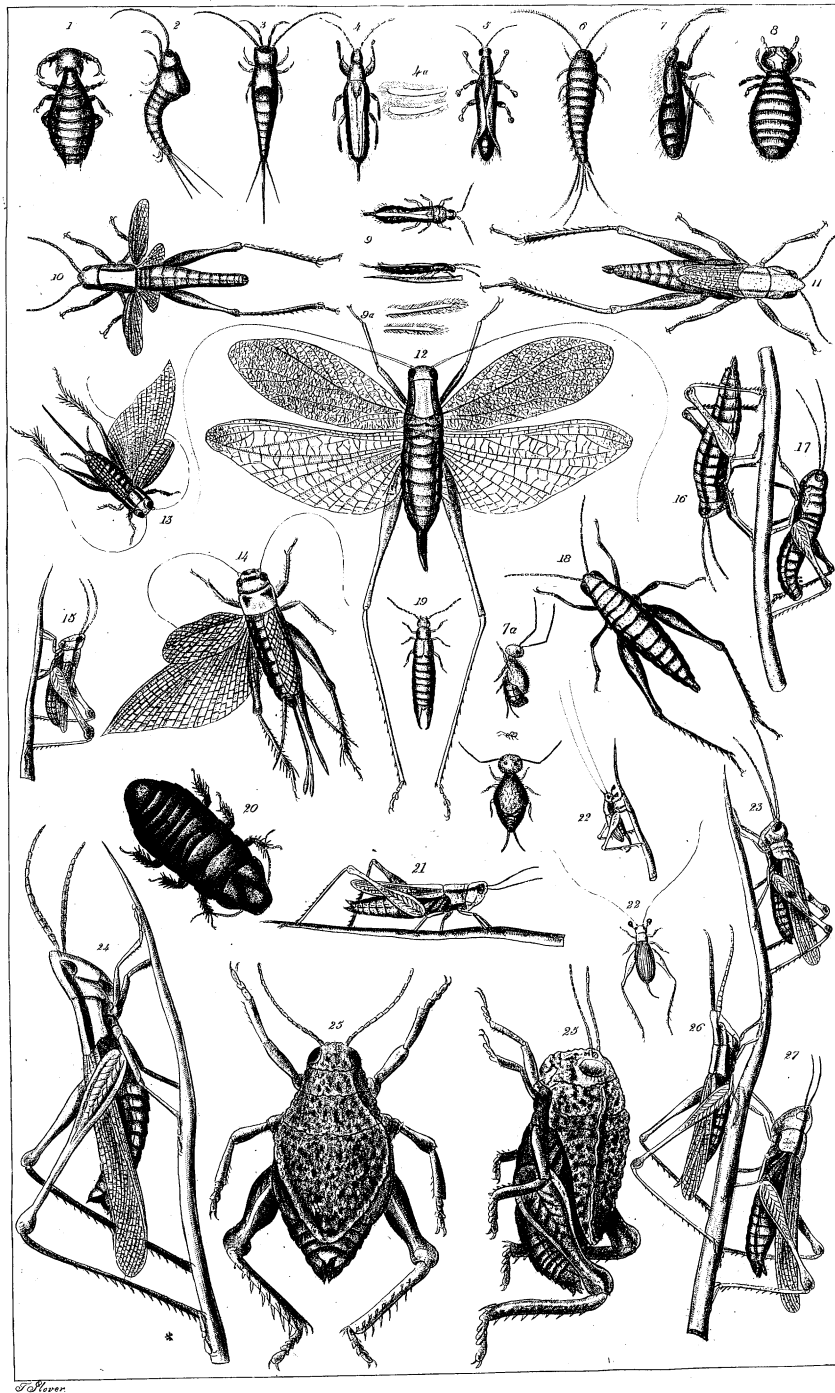




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\*Leunis. "Synopsis der drei Naturreiche." Hannover.

# VI





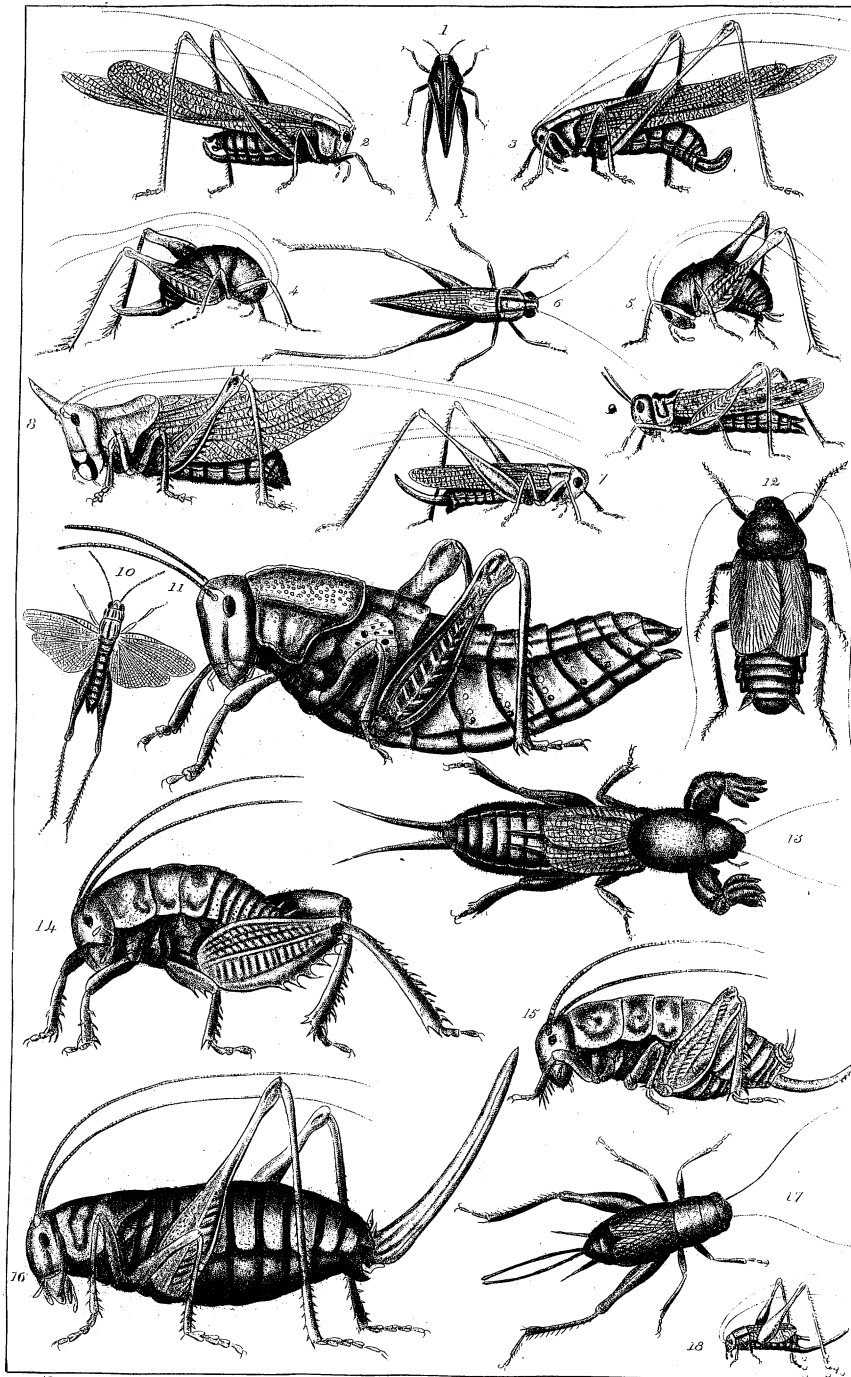




## PLATE VII.---ORTHOPTERA.

Fig. 1	$\left\{ \begin{array}{l} \text{Tettigidea (Scudd.) polymorpha. Scudd.} \\ \text{Tetrix (Latr.) parvipennis. Harr.} \\ \text{“ “ polymorpha. Burm (Var. B.)} \end{array} \right\}$	Scudd. Cat. 79 Scudd. Mono. 477. <i>Acrydii</i> .
2	$\left\{ \begin{array}{l} \text{Phaneroptera (Serv.) curvicauda. ♂} \\ \text{(Serv.)} \\ \text{Phaneroptera (Serv.) augustifolia. Harr.} \\ \text{Locusta (Linn.) curvicauda. De Geer.} \end{array} \right\}$	“ 65. “ 448. <i>Locustariae</i> .
3.	“ “ “ ♀ “	“ 65. “ 448. “
4	$\left\{ \begin{array}{l} \text{Ceuthophilus (Scudd.) lapidicolus ♀} \\ \text{(Scudd.)} \\ \text{Rhaphidiphora (Charp.) lapidicola. Burm.} \\ \text{Phalangopsis (Serv.) “ Burm.} \end{array} \right\}$	“ 21. “ 435. “
5	“ “ “ “	“ 21. “ 435. “
6	$\left\{ \begin{array}{l} \text{Orchelimum (Serv.) vulgare. ♂ Harr.} \\ \text{Pterophylla (Kirby MSS.) agilis. Harr.} \end{array} \right\}$	“ 57. “ 452. <i>Gryllides</i> .
7	“ “ “ ♀ “	“ 57. “ 452. “
8	$\left\{ \begin{array}{l} \text{Copiphora (Walk.) mucronata ♂} \\ \text{Thomas. (Hayden's Geol. Surv. Terr.} \\ \text{1871; 444, and Can. Ent. 1872.} \\ \text{Copiphora (Serv. of Agass.)} \end{array} \right\}$	“ 23. “ 0. <i>Acrydii</i> .
9	$\left\{ \begin{array}{l} \text{Cedipoda (Latr.) marmorata. ♀ Uhler.} \\ \text{Locusta (Linn.) “ Harr.} \end{array} \right\}$	“ 56. “ 473. “
10	$\left\{ \begin{array}{l} \text{Stenobothrus (Fischer.) curtippennis. ♂} \\ \text{Scudd.} \\ \text{Chloealtis (Harr.) curtippennis ♂ Harr.} \\ \text{Locusta (Linn.) “ Harr.} \end{array} \right\}$	“ 77. “ 456. “
11	$\left\{ \begin{array}{l} \text{Brachypeplus (Charp.) magnus. ♀} \\ \text{Girard.} \end{array} \right\}$	“ 20. “ 0. “
12	$\left\{ \begin{array}{l} \text{Stylopyga (Fisch.) orientalis. ♀ Fischer.} \\ \text{Blatta (Linn.)} \end{array} \right\}$	“ 78. “ 416. <i>Blattariae</i> .
13	$\left\{ \begin{array}{l} \text{Gryllotalpa (Latr.) borealis. ♂ Burm.} \\ \text{“ “ brevippennis. Serv.} \\ \text{“ “ americana. Say. MSS.} \\ \text{“ “ borealis. Burm.} \end{array} \right\}$	“ 29. “ 456. <i>Gryllides</i> .
14	<i>Daibina</i> (Hald.) brevipes. ♂ Hald.	“ 24. “ 443. <i>Locustariae</i> .
15	“ “ “ ♀ “	“ 24. “ 443. “
16	$\left\{ \begin{array}{l} \text{Anabrus (Hald.) haldemannii. ♀ Girard.} \\ \text{Pterolepis “ Thomas.} \end{array} \right\}$	“ 3. “ 0. “
17	$\left\{ \begin{array}{l} \text{Gryllus (Linn.) abbreviatus. ♀ Serv.} \\ \text{Acheta (Fab.) abbreviata. Harr.} \end{array} \right\}$	“ 30. “ 427. <i>Gryllides</i> .
18	$\left\{ \begin{array}{l} \text{Nemobius (Serv.) exiguus. ♀ Scudd.} \\ \text{Acheta (Fab.) exigua. Say.} \end{array} \right\}$	“ 55. “ 429. “

# VII



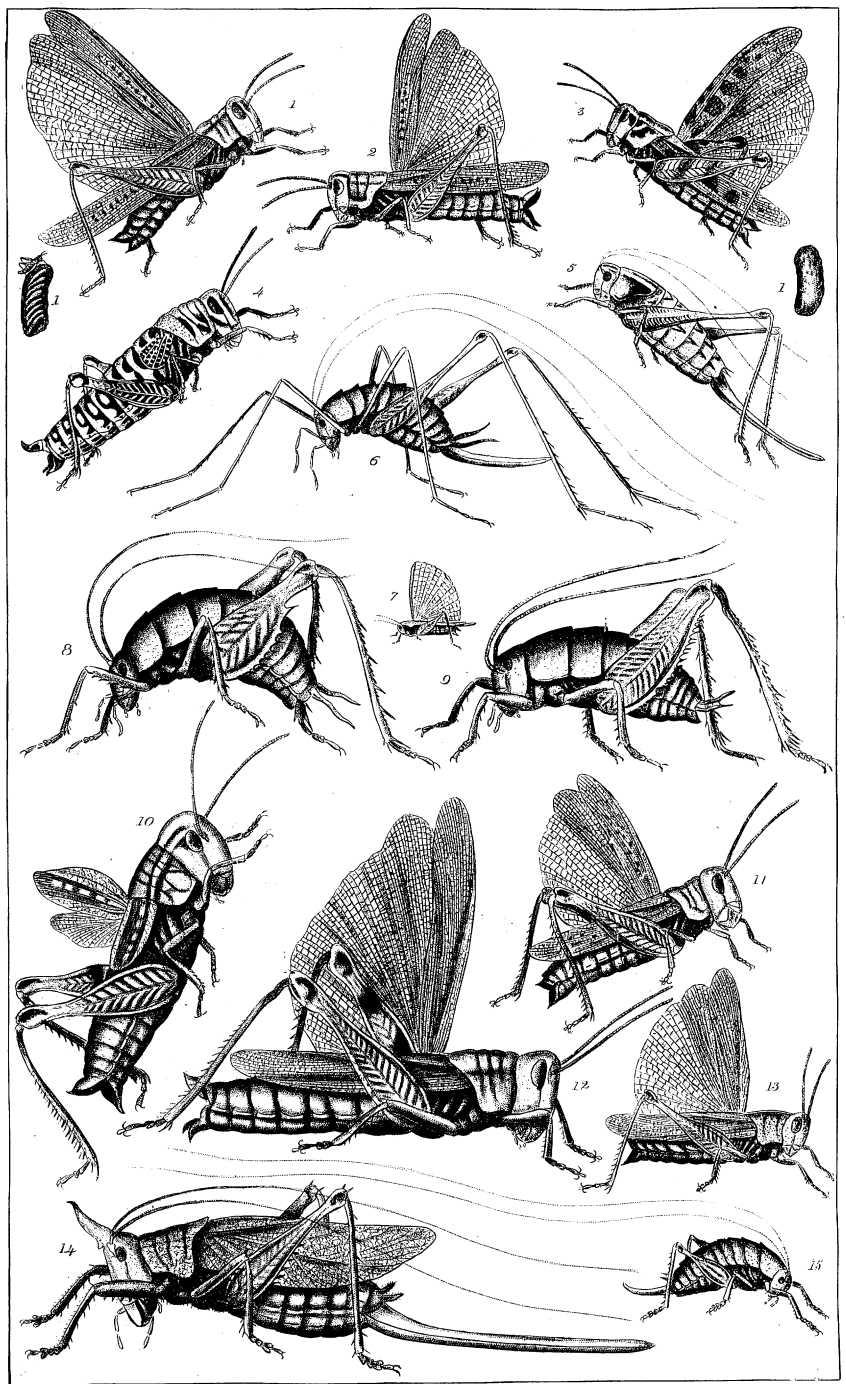




## PLATE VIII.---ORTHOPTERA.

Fig. 1 Caloptenus (Serv.) spretus. ♀ Uhler M.S.S. Scudd. Cat. 0. Scudd. Mono. 0. <i>Acrydii</i> .					
2	{ Caloptenus (Serv.) femur-rubrum. ♀ Burm. Acridium (Geoff.) " " Harr. }	"	20.	"	464. "
3	{ Edipoda (Latr.) atrox. { Scudd. in Hay- den's Geol. Surv. Neb. 253. Hayden's Geol. Surv., 1871, 458. }				"
4	{ Pezotettix (Burm.) picta. ♀ Thomas. Proc. Acad. Nat. Scien., Phil. 1870. }				"
5	{ Thamnotrizon (Fischer.) trilineatus. ♀ Thomas. Hayden's Geol. Surv. Terr., 1871, p. 443. Decticus (Serv.) trilineatus. }				<i>Locustariae.</i>
6	{ Hadenæcus (Scudd.) subterraneus. ♀ Scudd. Rhaphidophora (Charp.) subterraneus. }	"	40.	"	440. "
7	{ Tettix (Latr. emend.) lateralis(?) ♀ Scudd. Tetrix (Latr.) " Harr. Acridium (Geoff.) " Say. }	"	79.	"	477. <i>Acrydii</i> .
8	{ Ceuthophilus (Scudd.) Uhleri. ♀ (affinis.) Scudd }	"	21.	"	435. <i>Locustariae.</i>
9	{ Udeopsylla (Scudd.) robusta. ♂ Scudd. Phalangopsis (Serv.) " Hald. Daihinia (Hald.) " " }	"	83.	"	443. "
10	{ Boopidon (Thomas.) flavofasciatum. ♀ Thomas. Proc. Acad. Nat. Sci. Phil., 1870. }				<i>Acrydii.</i>
11	{ Stauronotus (Fischer.) Elliotti. ♀ Thomas. Pr. Acad. Nat. Scien. Phil. 1870, 82. }				"
12	{ Caloptenus (Serv.) differentialis. ♀ Thomas. }	"	5.	"	0. "
13	{ Acridium (Geoff.) alutaceum. ♀ Harr. (Small spec.) Acridium rusticum (Burm. only.) " torvum. Say. and Harr. }	"	4.	"	466. "
14	{ Copiphora (Walk.) mucronata. ♀ Thomas. Hayden's Geol. Surv. Terr., 1871, p. 444. Copiphora (Serv.) }	"	23.	"	0. "
15	Camptonotus (Uhler.) Scudderi. ♀ Uhler.	"	21.	"	<i>Locustariae.</i>

VIII



J. Glover



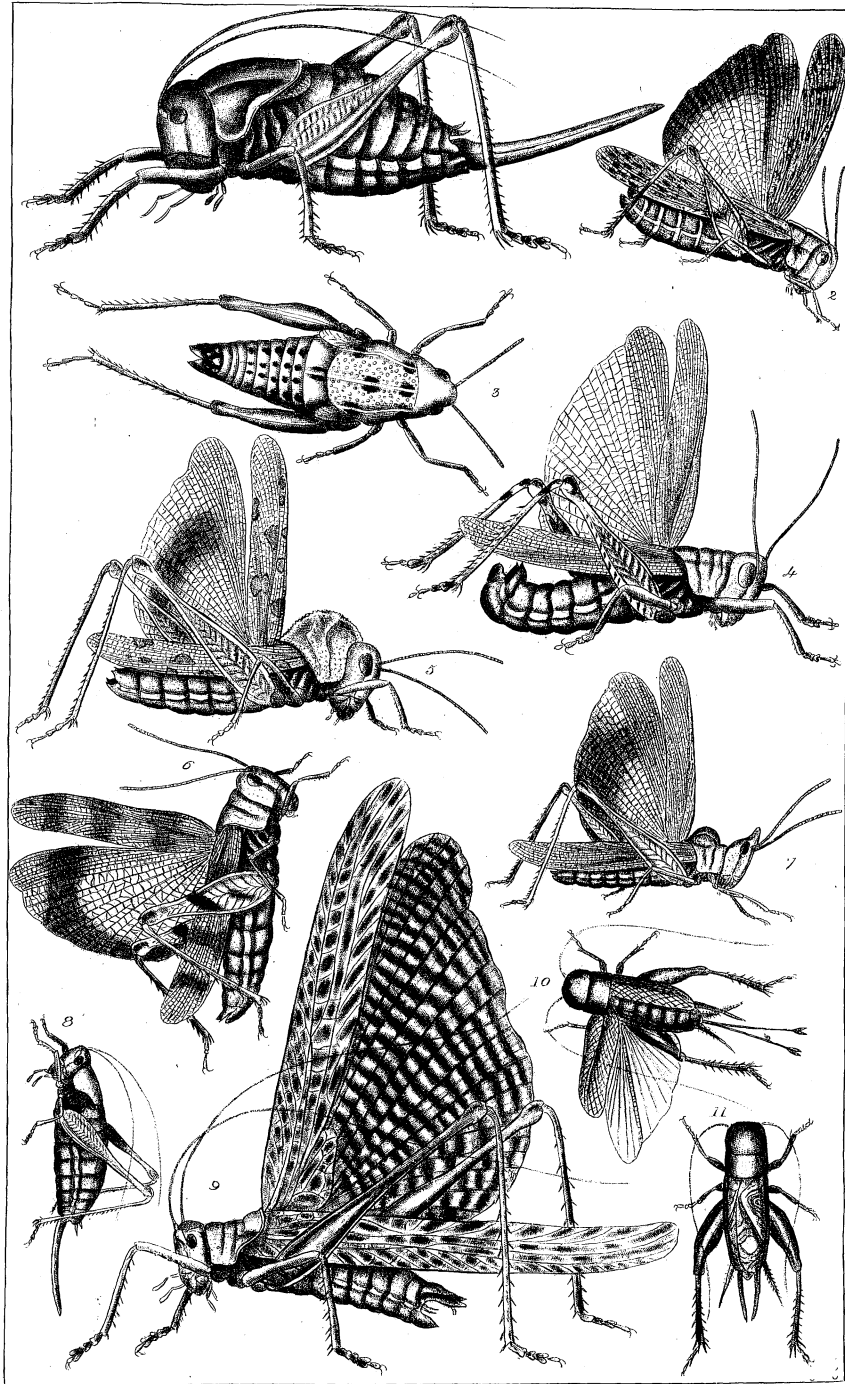




# PLATE IX.---ORTHOPTERA.

Fig. 1	{ Anabrus (Hald.) simplex. ♀ Hald. Thomas. Hayden's Geol. Surv. Terr. 1871, p. 438. }	Scudd. Cat. 8. Scudd. Mono.	0. <i>Locustariæ.</i>
2	{ Ædipoda (Latr.) tenebrosa. ♀ Scudd. Thomas Geol. Surv. Terr. 1871, p. 459. Tomonotus (Sauss.) mexicanus. Thomas. Pr. Acad. Nat. Sci., Phil., 1870. }		<i>Acrydii.</i>
3	{ Brachypeplus (Charp.) virescens. ♀ Charp. }	" 20. "	0. "
4	{ Caloptenus (Serv.) differentialis. ♂ Thomas. }	" 5. "	0. "
5	Gryllus (Linn.) formosus. ♀ Say.	" 34. "	0. <i>Gryllides.</i>
6	{ Ædipoda (Latr.) trifasciata. ♀ Walk. Thomas. Hayden's Geol. Surv. Terr. 1871, p. 456. Ædipoda (Latr.) pruinosa. Thomas. Pr. Acad. Nat. Sci., Phil., 1870. Gryllus (Linn.) trifasciata. Say. Am. Ent. Fig. 3, pl. 34. }	" 39. "	0. <i>Acrydii.</i>
7	{ Acrolophitus (Thomas.) hirtipes ♀ Thomas. Gryllus (Linn.) hirtipes. Say. }	" 38. "	0. "
8	{ Decticus (Serv.) pallidipalpis. ♀ Thomas. Hayden's Geol. Surv. Terr. 1871, p. 442. }	" 24. "	0. <i>Locustariæ.</i>
9	{ Locusta (Linn.) fuliginosa. ♂ Thomas. Hayden's Geol. Surv. Terr. 1871, p. 443. }		<i>Acrydii.</i>
10	{ Gryllus (Linn.) luctuosus. ♀ Burm. and Serv. Acheta (Linn.) luctuosus. }	" 35. "	427. "
11	Acheta (Linn.) luctuosus ♂	" 35. "	427. "

IX



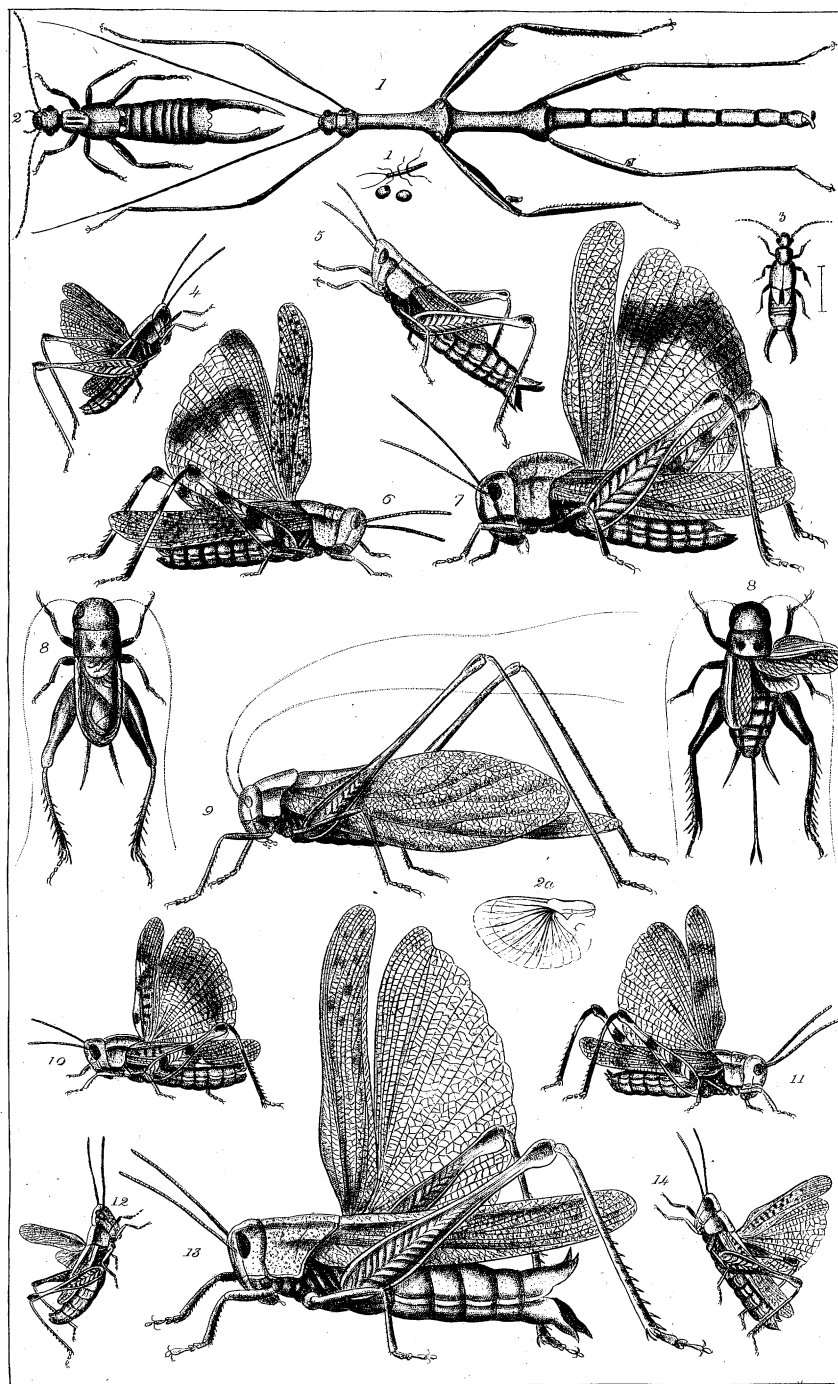
T. Hovener





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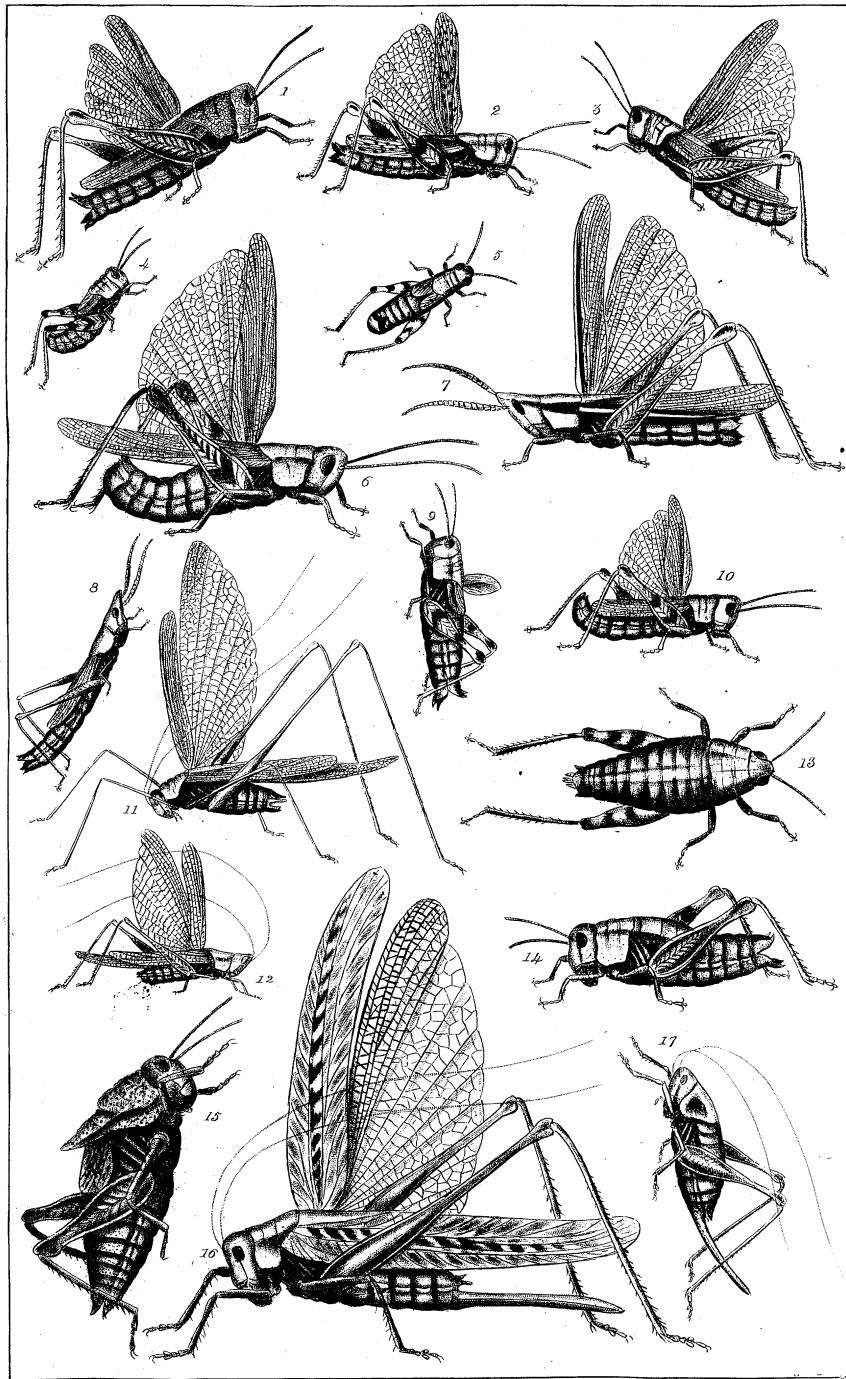


## PLATE XI.---ORTHOPTERA.

Fig. 1 *Acridium* (Geoff.) *frontalis*. ♀ Thomas. Hayden's Geol. Surv. Terr., 1871, p. 448.

- |    |   |                     |
|----|---|---------------------|
| 2  | $\left\{ \begin{array}{l} \text{Caloptenus (Serv.) occidentalis. } \text{♀} \\ \text{Thomas. Hayden's Geol. Surv. Terr., } \\ \text{1871, p. 453.} \end{array} \right\}$                                    | <i>Acrydii.</i>     |
| 3  | $\text{Caloptenus (Serv.) viridis. } \text{♀} \text{ Thomas. Hayden's Geol. Surv. Terr., 1871, p. 450.}$  | “                   |
| 4  | $\left\{ \begin{array}{l} \text{Caloptenus (Serv.) Dodgei. } \text{♂} \text{ Thomas.} \\ \text{Hayden's Geol. Surv. Terr., 1871,} \\ \text{p. 451.} \end{array} \right\}$                                   | “                   |
| 5  | $\left\{ \begin{array}{l} \text{Caloptenus (Serv.) Dodgei. } \text{♂} \text{ Thomas.} \\ \text{Hayden's Geol. Surv. Terr., 1871,} \\ \text{p. 451.} \end{array} \right\}$                                   | “                   |
| 6  | $\left\{ \begin{array}{l} \text{Caloptenus (Serv.) differentialis. } \text{♂} \\ \text{Thomas. (Dark var.)} \end{array} \right\}$   | Scudd. Cat. 5. “    |
| 7  | $\left\{ \begin{array}{l} \text{Opomala (Serv. emend.) bivittata. } \text{♀} \\ \text{Say.} \\ \text{Opsomala (Serv.)} \end{array} \right\}$  | 58. “               |
| 8  | $\left\{ \begin{array}{l} \text{Mesops (Serv.) Wyomingensis. } \text{♀} \\ \text{Thomas. Proc. Phil. Acad. Nat. Sci.,} \\ \text{1871.} \\ \text{Opomala (Serv. emend.)} \end{array} \right\}$               | “                   |
| 9  | $\text{Caloptenus (Serv.) Dodgei. } \text{♀} \text{ Thomas. (See above.)}$  | “                   |
| 10 | $\left\{ \begin{array}{l} \text{Caloptenus (Serv.) Turnbullii. } \text{♂} \text{ Thomas.} \\ \text{(Var. A.) Hayden's Geol. Surv. Terr.,} \\ \text{1871, p. 452.} \end{array} \right\}$                     | “                   |
| 11 | $\left\{ \begin{array}{l} \text{Ephippitytha (Serv.) gracilipes. } \text{♂} \\ \text{Thomas.} \end{array} \right\}$   | <i>Locustariae.</i> |
| 12 | $\text{Phaneroptera (Serv.) coloradensis. } \text{♂} \text{ Thomas. MSS.}$  | “                   |
| 13 | $\left\{ \begin{array}{l} \text{Pezotettix (Burm.) obesa. } \text{♀} \text{ Thomas.} \\ \text{Hayden's Geol. Surv., Terr., 1871,} \\ \text{p. 454.} \end{array} \right\}$                                   | <i>Acrydii.</i>     |
| 14 | $\text{Pezotettix (Burm.) obesa. } \text{♀} \text{ Thomas.}$  | “                   |
| 15 | $\text{Ephippigera (Serv.) tschivavensis. } \text{♀} \text{ (Hald.) Stansbury's Report.}$   | “                   |
| 16 | $\left\{ \begin{array}{l} \text{Locusta (Linn.) occidentalis. } \text{♀} \text{ Thomas.} \\ \text{Hayden's Geol. Surv. Terr., 1871, p.} \\ \text{444.} \end{array} \right\}$                                | “                   |
| 17 | $\left\{ \begin{array}{l} \text{Pterolepis (Serv.) minutus. } \text{♀} \text{ Thomas.} \\ \text{Hayden's Geol. Surv. Terr., 1871, p. 441.} \\ \text{Anabrus (Hald.) minutus. Thomas.} \end{array} \right\}$ | <i>Locustariae.</i> |

XI



*T. Glover*

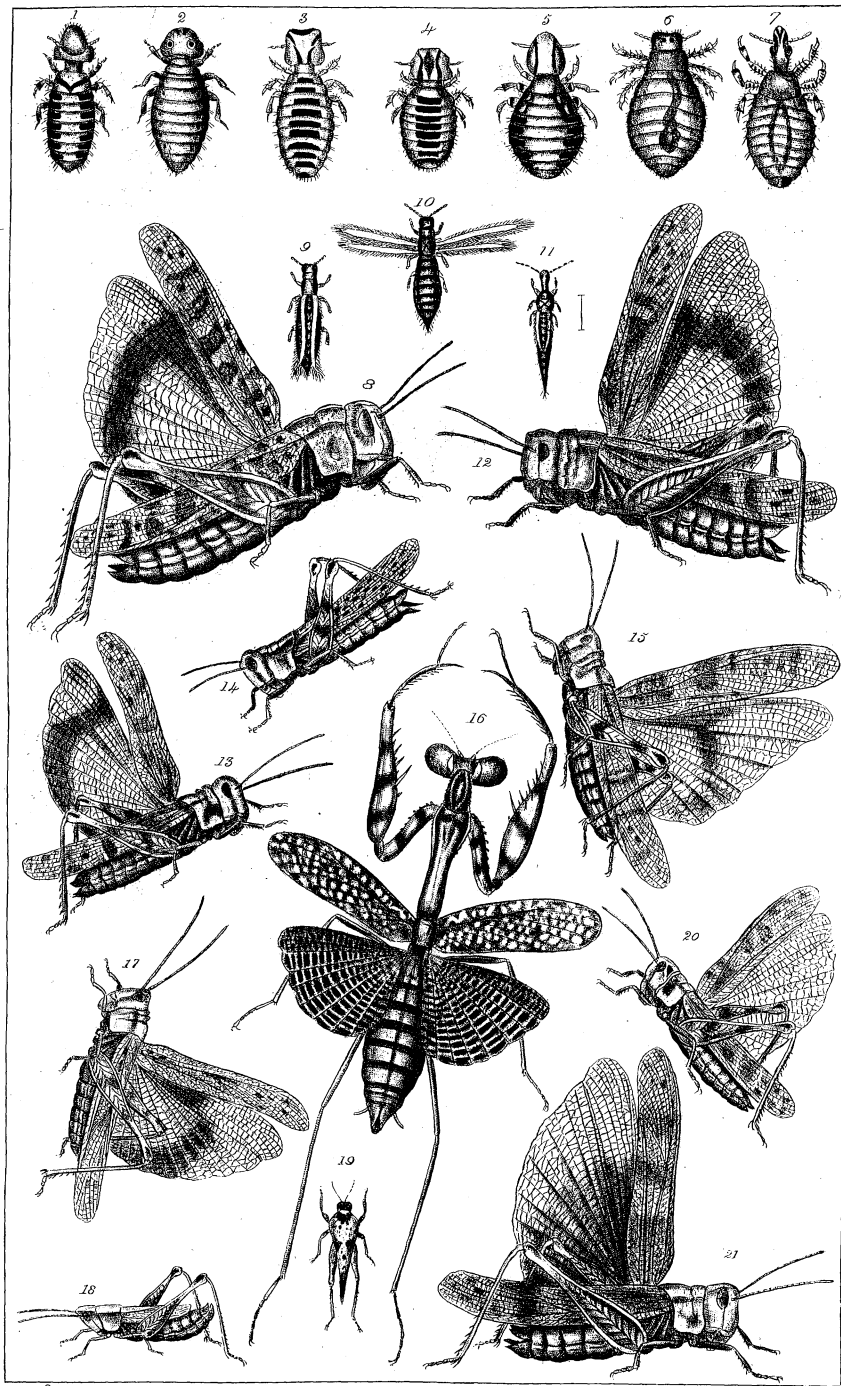




## PLATE XII.---ORTHOPTERA.

- |        |  |   |
|--------|--|---|
| Fig. 1 | Nirmus argulus. From Rev. J. G. Wood. Nat. Hist., illustrated, p. 686.   | <i>Mallophaga.</i>                                |
| 2      | Menapon pallidum. Nat. Hist., illustrated, p. 686.   | "   |
| 3      | Trichodectes longicornis. Nat. Hist., illustrated, p. 685.   | "   |
| 4      | Trichodectes equi. Nat. Hist. illustrated, p. 685.   | "   |
| 5      | Docophorus cygni. Nat. Hist., illustrated, p. 686.   | "   |
| 6      | Haematopinus piliferus. Nat. Hist., illustrated, p. 685.   | "   |
| 7      | { Haematopinus suis. Denny Monog. an-<br>oplurum. Nat. Hist., illustrated, p.<br>685. }  | "   |
| 8      | Edipoda (Latr.) rugosa. ♀ Scudd. Scudd. Cat. 55. Scudd. Mono. 469.   | <i>Acrydii.</i>                                   |
| 9      | Thrips (Linn.) cerealeum. Halid. From an English work.   | <i>Thripidae.</i>                                 |
| 10     | " " " " " " "  | "   |
| 11     | Phloeothrips autumnalis. Uhler. Found on Oak, Md.  | "   |
| 12     | { Edipoda (Latr.) montana. ♀ Thomas.<br>Hayden's Geol. Surv. Terr., 1871, p. 462. }  | <i>Acrydii.</i>                                   |
| 13     | { Edipoda (Latr.) cincta. ♀ Thomas.<br>Proc. Acad. Nat. Sci., Phil., 1870. 70.<br>Hayden's Geol. Surv. Terr., 1871, p. 464. }          | "   |
| 14     | { Caloptenus (Serv.) griseus. ♀ Thomas.<br>Hayden's Geol. Surv. Terr., 1871, p. 454. }   | "   |
| 15     | { Edipoda (Latr.) undulata. Thomas.<br>Hayden's Geol. Surv. Terr., 1871, p. 460. }   | "   |
| 16     | Mantis (Linn.) New sp.   | <i>Mantides.</i>                                  |
| 17     | { Edipoda (Latr.) maritima. ♂ Scudd.<br>Locusta (Linn.) maritima. (Harr.) }  | Scudd. Cat. 56. Scudd. Mono. 472. <i>Acrydii.</i> |
| 18     | { Stenobothrus (Fischer.) curtipennis. ♂<br>Scudd.<br>Chlocaltis (Harr.) curtipennis. Harr.<br>Locusta (Linn.) " Harr. }               | " 77. " 456. "                                    |
| 19     | { Tettix (Latr. emend.) ornata. Scudd.<br>Acridium (Fab.) ornatum. Say. (From<br>Say's fig.) }   | " 79. " 474. "                                    |
| 20     | Edipoda (Latr.) pellucida. ♀ Scudd.  | " 57. " 472. "                                    |
| 21     | { Edipoda (Latr.) carlingiana. ♂ Thomas.<br>Proc. Acad. Nat. Sci., Phil., 1870, 81, and<br>Hayden's Geol. Surv. Terr., 1870, p. 275. } | "   |

XII



*J. P. V. 1840*





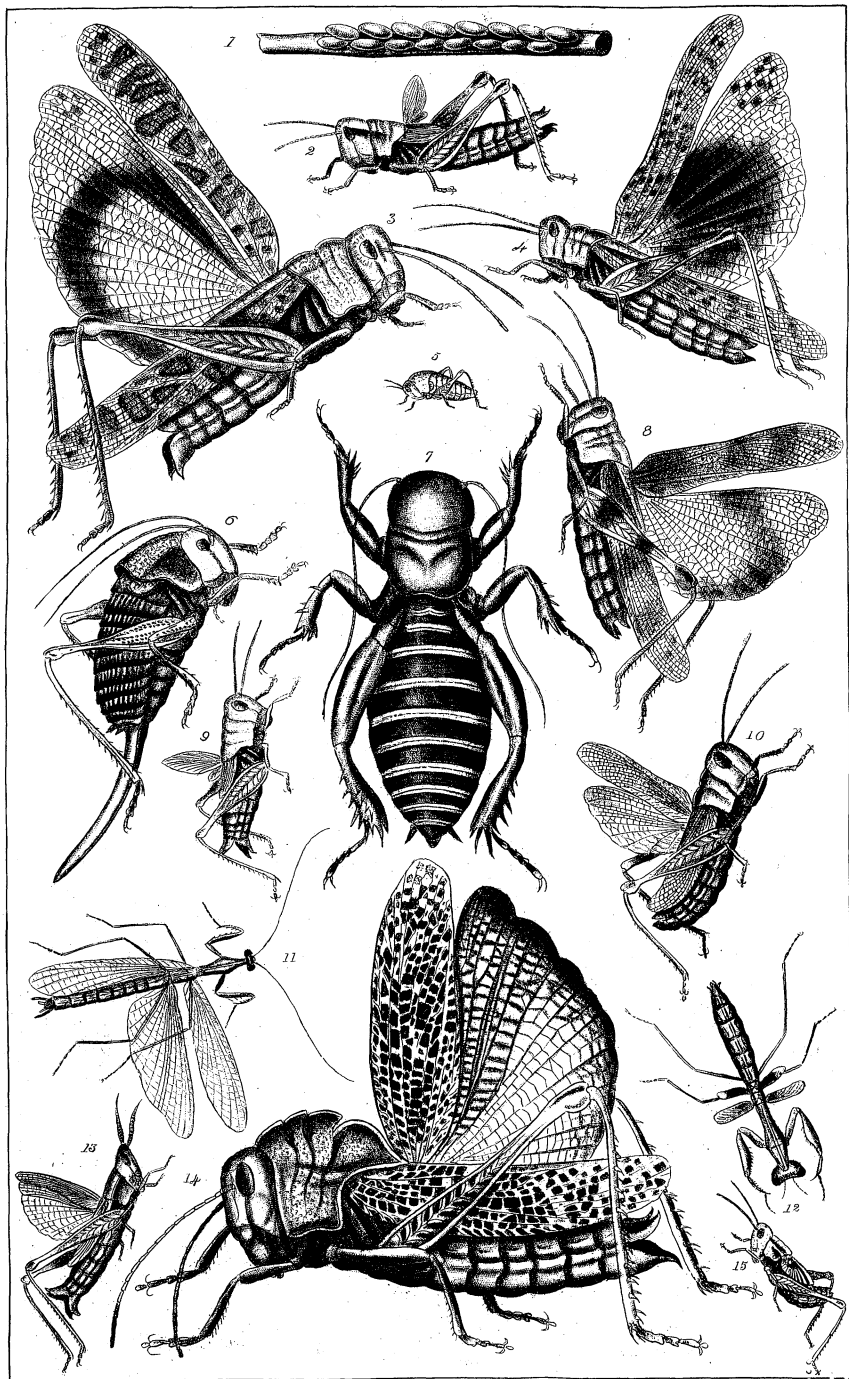


## PLATE XIII.---ORTHOPTERA.

- Fig. 1 { Eggs of Phylloptera (Serv.) oblongifolia. } Scudd. Cat. 68. Scudd. Mono. 445. *Locustariae*.  
           Burm.  
           Locusta (Linn.) oblongifolia. De Geer. }
- 2 Pezotettix (Burm.) nebrascensis. Thomas. Hayden's Geol. Surv. Terr., 1871, p. 455 *Acrydii*.
- 3 { Edipoda (Latr.) Haldemanni. Scudd. Hayden's Geol. Surv., Neb., p. 253. "  
       Edipoda (Latr.) corallipes. Hald. Stansbury's Rep., p. 371, pl. 10, fig. 2. "
- 4 Edipoda (Latr.) longipennis. Thomas. Hayden's Geol. Surv., 1871, p. 463. "
- 5 Batrachidea (prob.) pupa. From Md. "
- 6 { Thamnotrizon (Fischer) scabricollis. Thomas. Hayden's Geol. Surv. Terr., *Locustariae*.  
       1871, p. 441. }
- 7 { Stenopelmatus (Burm.) fasciatus. Thomas. (large sp. from Cal.) Hayden's Geol. "  
       Surv. Terr., 1871, p. 434. }
- 8 { Edipoda (Latr.) aequalis. Uhler. } Scudd. Cat. 55. Scudd. Mono. 470. *Acrydii*.  
       Locusta (Linn.) " Harr.  
       Gryllus (Linn.) " Say. }
- 9 Pezotettix (Burm.) unicolor. Thomas. "
- 10 { Boopidon (Thomas) nubilum. Thomas. Hayden's Geol. Surv. Terr., 1870, p. 273. "  
       Boopidon (Thomas) nigrum. Thomas. Gryllus (Linn.) nubilus. Say. }
- 11 Mantis (Linn.) missouriensis. Riley. MSS. *Mantides*.
- 12 Mantis (?) Thomas. From Wyoming Terr, "
- 13 Oxyccoryphus (Fischer) obscurus. Thomas. Hayden's Geol. Surv. Terr., 1871, p. 466. *Acrydii*.
- 14 { \*Acridium (Geoff.) semi-rubrum. Saussure. Scudd. Cat. 7. "  
       Acridium (Geoff.) flavicorne of Stoll. }
- 15 { Caloptenus (Serv.) spretus. Uhler. (Young insect.) Thomas. "  
       Desc. Hayden's Geol. Surv. 1871, p. 451. }

\*Acridium semi-rubrum is said, by Rev. CYRUS THOMAS, to have been taken in Southern Texas, but is mentioned by FITCH in Trans. N. Y. S. Ag. Soc., 1856, p. 490, as occurring in Cayenne only.

XIII



J. G. Sowerby







## NOTES ON FOOD

AND

## HABITS OF ORTHOPTERA.

The list of vegetable and animal substances injured by Orthoptera, as given below, comprises a very small number of the most important, as it would take up too much space in a merely preliminary sketch to enumerate them all.

Should, however, the text relating to the insects figured be published, it is designed to give a full list of all the substances injured, as well as all the insects injuring them, as mentioned by the various authors who have written on the subject.

Before commencing the list it may, however, be advisable to mention some of the principal families, in relation to their food, in general terms. The *Gryllina* (*Ceuthophilus*, Pl. III, Fig. 5; *Ceacanthus*, Pl. IV, Figs. 1, 2,) are mostly vegetable feeders, whilst *Anabrus simplex* (Pl. IX, Fig. 1,) varies its diet, according to the REV. CYRUS THOMAS, by devouring the Cicada, or harvest-flies, whenever it can capture them.

The true crickets (*Gryllus* or *Acheta*, Pl. X, Fig. 8,) live under stones, &c., and, although vegetable feeders, living on roots and herbage, yet, in many instances, they injure animal substances, such as cloth, leather, &c., when it is in the neighborhood of their haunts. The Mole crickets (*Gryllotalpa*, Pl. VII, Fig. 13,) burrow under the earth like moles, and usually feed on roots and herbage, and in Europe do considerable injury. The Locustariæ (*Phaneroptera*, Pl. VII, Figs. 2, 3; *Cyrtophyllus*, Pl. IV, Fig. 15, katydids,) inhabit shrubs and trees, feeding principally on their foliage, whilst the slender meadow grasshopper, *Orchelimum* (Pl. IV, 78,) feeds mostly on grass and herbage. The wingless Locustariæ (*Stenopelmatus*, Pl. XIII, Fig. 7,) live on the ground and are said to feed on vegetable substances.

The Acrydii, or true grasshoppers and locusts, (*Caloptenus*, Pl. VII, *Acridium*, Pl. I, Fig. 15; *Edipoda*, Pl. V, Fig. 3; and *Locusta*, Pl. IX, Fig. 9,) live principally amongst the grass and low herbage, and devour all kinds of vegetable substances. Some species assemble in great numbers when migrating, like the locust of scripture, and are extremely injurious to almost all kinds of vegetation. The Mantides (*Mantis carolina*, Pl. II,) are altogether predaceous. They kill and devour all other insects they can over-



power, and are, therefore, almost the only family amongst the Orthoptera which are at all beneficial to the farmer as destroying other injurious insects. The Phasmidae, spectres, or walking sticks, (*Diapheromera*, Pl. X, Fig. 1,) resemble twigs, in form and color, and feed on the foliage of various shrubs and trees, whilst the Blattariae, or cockroaches, (*Stylopyga*, Pl. VII, Fig. 12; *Ectobia*, Pl. I, Figs. 4, 5,) are almost omnivorous; feeding indiscriminately on both vegetable and animal substances, and are extremely destructive in houses and on shipboard. The Forficulariae, or earwigs, (*Forficula*, Pl. X, Fig. 2,) are not numerous enough in this country to do much injury, but in Europe are said to injure flowers and ripe fruit, and occasionally to feed on small insects. The Thripidae certainly do much injury to the tender foliage of the grape vine, &c., and are very destructive to greenhouse plants. Thrips cerealeum, (Pl. XII, Figs. 9, 10,) injures the wheat crop in Europe by sucking the sap of the grain or seed and cause it to shrivel up and wither. MR. WALSH, however, considered the true Thrips in the light of a beneficial insect, stating that it destroyed the larvae of the destructive wheat midge *Cecidomyia* (*Diplosis*) *tritici* and other injurious insects.

Some of the wingless orthoptera (*Podura*, the springtail, Pl. VI, Fig. 17,) are stated, by MR. CURTIS, to feed upon the pulp of leaves, at the same time poisoning the sap and thus injuring the plants. The Mallophaga (or bird lice, Pl. XII, Fig. 1,) *Nirmus argulus* and dog louse, *Trichodectes latus*, Pl. VI, Fig. 8,) feed upon the feathers and hairs of the birds or animals they infest, and do not injure them by sucking the blood. By thus studying the food of the various Orthopterous insects, we find that all of them are more or less injurious to the farmer, with the sole exception of the Mantis, or rear-horse, as it is commonly called in Maryland and Virginia, which lives altogether on animal food, and is, therefore, beneficial as destroying injurious insects.

The family of Orthoptera is stated, by DR. PACKARD, to contain "about 5,000 species" and constitutes a very important article of food for certain animals, birds and fishes. Some of the grasshoppers are even eaten by our western Indians, when partially roasted and coarsely pulverized between two stones. A specimen of food used by the Indians now in the Museum of the Department of Agriculture, in Washington, sent from Camp Harney, Oregon, by Asst. Surgeon MOFFATT, U. S. A., which contains a great number of the heads and femora of some great wingless grasshopper or cricket, (apparently *Anabrus simplex*, Pl. IX, Fig. 1,) which is so abundant in some parts of the west. Several of the Orthoptera are also subject to be destroyed by both external and internal parasites. A coleopterous insect, *Rhipiphorus*, (*Symbius*) *blattarum*, probably the same as *Rhipidius*, mentioned by PACKARD, is parasitic in the bodies of certain cockroaches. Several species of Ichneumon-flies, *Evania loevigata*, Oliv, and a species of *Pteromalus* are said to destroy the eggs of cockroaches. A large species of *Asilus*, or robber-fly, according to the REV. C. THOMAS, also destroys numbers of grasshoppers by sucking out their juices. A species of *Tachina*, a two-winged fly, very similar

to our house fly, but larger, and having a more hairy body, destroys the perfect insect of the Mantis, or rear-horse, as many as nine having come out of the body of one *Mantis carolina*, (Pl. II, Figs. 1, 2, 3.) An Ichneumon-fly destroys the eggs of katydids. Crickets, grasshoppers and katydids are infested with the *Filaria*, *Gregarina* and *Gordins*, hair-snakes, or worms, which live in their bodies. A small scarlet-red mite. *Astoma locustarum* (WALSH) or *Ocypete* of HARRIS is frequently found clustered on the body or under the wings of grasshoppers, and it is said that when numerous, they eventually kill the insect they infest. In late summer and autumn great numbers of dead and dried-up grasshoppers are frequently observed in Maryland and Virginia, clinging fast to the tops of the highest stalks of grass or weeds. These probably have been destroyed by some animal or vegetable parasite, at present unknown.

Many of the so-called dirt-daubers, mud and sand wasps, provision their nests with young grasshoppers to serve as food for their larva, and there is no doubt that when more attention is given to the habits of our Orthoptera, many other parasites especially among the Ichneumon-flies, Chalcididae, &c., will be discovered and made known to the public.



# ALPHABETICAL LIST

## OF

### VEGETABLE AND ANIMAL SUBSTANCES

#### INJURED BY

# ORTHOPTERA.

The number of the plate on which the insect is figured will be distinguished by being in Roman numerals, whilst the number of the figure will be placed in italics, thus: IV, 6; plate 4, figure 6.

When the mark, †, is placed before the name of an insect, it signifies that it is injurious; ††, very injurious; ‖, beneficial; †‖, more injurious than beneficial; and ‖†, more beneficial than injurious.

Aphides, †‖ *Ecanthus niveus*, IV, 1, 2, said to destroy plant lice, and also injures grape-vines, &c.

Beneficial. See Predaceous.

Birds. *Nirmus argulus*, XII, 1. Louse. Parasitic upon

Blackberry. † *Ecanthus niveus*, IV, 1, 2, deposits eggs in cane, and injures

Cherry. † *Ecanthus niveus*, IV, 1, 2, deposits eggs in cane, and injures

Books. † *Ectobia germanica*, I, 4, eats, destroys and covers with filth.

Books. † *Stylopyga orientalis*, VII, 2, (and other cockroaches in general,) eats, destroys, and covers with filth.

Caves. *Hadenococcus subterraneus*, VIII, 6, found in

Clothing. † *Ectobia germanica*, I, 4, eats and destroys

Clothing. † *Stylopyga orientalis*, VII, 2, eats and destroys

Corn. See Maize.

Currant. † *Ecanthus niveus*, IV, 1, 2, deposits eggs on twigs, and injures

Deer fallow. *Trichodectes longicornis*, XII, 3. Louse, parasite on

*Diplosis tritici*. See wheat midge.

Dogs. *Trichodectes latus*, VI, 8. Louse, parasite on

Dogs. *Haematopinus piliferus*, XII, 6. parasite on

Fruits. † *Gryllus neglectus*, (and crickets in general,) X, 8, injure

Fruits. † *Caloptenus femur-rubrum*, (and grasshoppers in general,) VIII, 2, injure

Fungi. *Smynthurus*, VI, 7, inhabits

*Gnaphalium*. *Anisomorpha buprestoides*, I, 8, probably feeds on

Grain. †† *Caloptenus femur-rubrum* (and grasshoppers in general,) VIII, 2, destroys plants.

Grain. †† *Thrips cerealeum* (Europe,) XII, 9, 10, sucks out milky juice, and destroys

Grape. † *Ecanthus niveus*, IV, 1, 2, devours foliage, severs branches, and injures shoots by depositing eggs in them.

Grape. † *Orocharis saltator*, III, 11, 12, deposits eggs on branches, and injures

Grass. †† *Caloptenus femur-rubrum*, (and all the grasshoppers in general,) VIII, 2, eat and destroy

Grass. † *Ecdipoda sulphurea*, &c., &c., V, 6, eat and destroy

Grass. † *Acridium americanum*, &c., I, 15, (and many of the other orthoptera.)

Greenhouse plants. †† *Thrips*. (?) VI, 9, injure

Herbage. See insects destroying grass.

Hog. *Haematopinus suis*, XII, 7, louse parasitic on

Horse. *Trichodectes equi*, XII, 4, louse parasitic on

Insects in general. See predaceous.

Leather. † *Ectobia germanica*, (and other cockroaches,) I, 4, eat holes in

Lemon. † *Phylloptera oblongifolia*, IV, 4, (and other insects found on orange,) injure foliage.

Maize. †† *Caloptenus femur-rubrum*, VIII, 2, (and many of the other grasshoppers,) injure young plants and blades. See grass.

Melons. † *Gryllus neglectus*, X, 8, (and other crickets,) injure

- Oak. *Acridium rubiginosum*, V, 5, found on  
Oak. *Phloeothrips autumnalis*, XII, 11, found on  
Onion. †† *Limothrips tritici* (for Thrips see VI, 9,) injures  
Orange. † *Phylloptera oblongifolia*, IV, 4, injures foliage.  
Orange. † *Romalea microptera*, III, 4, injures foliage.  
Orange. † *Acridium obscurum*, V, 2, injures foliage.  
Palmetto. *Anisomorpha buprestoides*, I, 8, found on  
Paper. See books.  
Peacock. *Philopterus falcicornis*, VI, 1, louse parasitic on  
Peach. † *Ecanthus niveus*, IV, 1, 2, injures twigs by depositing eggs in them.  
Plum. † *Ecanthus niveus*, IV, 1, 2, injures twigs by depositing eggs in them.  
Potato. † *Gryllus neglectus*, X, 8, (and other crickets,) feeds on, and injures  
Potato. † *Caloptenus femur rubrum*, VIII, 2, (and other grasshoppers,) sometimes injure foliage.  
Potato. † *Gryllotalpa longipennis*, I, 12, (and mole crickets in general,) injure roots, &c.  
Poultry. *Menapon pallidum*, XII, 2, louse, parasitic on.  
Predaceous. ‖ *Mantis carolina*, II, 1, 2, feed entirely on other insects.  
Predaceous. †‖ *Forficula*, VI, 19, said to eat aphides, &c., but also destructive to flowers, fruits, &c., in Europe.  
Predaceous. †‖ Thrips, VI, 9, said to destroy larvae of wheat midge, &c.  
Predaceous. †‖ *Anabrus simplex*, IX, 1, devours harvest-fly or cicada.  
Raspberry. † *Ecanthus niveus*, IV, 1, 2, injures twigs by depositing eggs in them.  
Roots in general, † *Gryllus neglectus*, X, 8, (and crickets in general,) feed upon and injure  
Roots in general. † *Gryllotalpa longipennis*, I, 12, (and mole crickets in general,) feed upon and injure  
Silk. † *Lepisma saccharina*, VI, 6, said to eat holes in  
Shrubs. † *Cyrtophyllus concavus*, IV, 15, (and katydids in general,) feed on  
Shrubs. *Diapheromera femorata*, X, 1, feeds on foliage.  
Squash. † *Gryllus neglectus*, X, 8, (and other crickets,) feeds upon, and injures  
Pumpkin, &c. † *Caloptenus femur rubrum*, VIII, 2, (and other grasshoppers,) injures foliage.  
Sugar-cane. *Gryllotalpa didactyla* in West Indies, injures  
Swan. *Dacophorus cygni*, louse parasitic on  
Trees. See shrubs.  
Vegetables. † *Gryllus neglectus*, (X, 8, (and other crickets,) injures roots and leaves.  
Vegetables. † *Gryllotalpa longipennis*, I, 12 (and other mole crickets,) injures roots and leaves.  
Vegetables. †‖ *Caloptenus femur rubrum*, VIII, 2, (and other grasshoppers,) destroys  
Vegetable substances. *Podura*, VI, 7, feeds upon  
Victuals. †‖ *Ectobia germanica*, I, 4, (and all cockroaches,) injures and render filthy.  
Wheat. †‖ Thrips cerealum, IX, 10, injures grain.  
Wheat midge. †‖ Thrips, V, 9, said by WALSH to destroy larvae of wheat midge so destructive to grain.  
Woollen cloth. † *Gryllus domestica*, VI, 14, eats holes in

## ALPHABETICAL LIST OF GENERA FIGURED.

NOTE.—The number of the plate on which the insect is figured will be distinguished by being in Roman numerals, whilst the number of the figure will be in italics, thus: IV, 6; plate 4, figure 6.

- Acheta. See Gryllus, Nemobius.  
 Acridium alutaceum, VIII, 13; X, 13.  
 Acridium americanum, I, 15.  
 Acridium frontalis, XI, 1.  
 Acridium obscurum, V, 12.  
 Acridium rubiginosum, V, 5.  
 Acridium semirubrum, XIII, 14.  
 Acridium. See also. Caloptenus, CEdipoda, Opomala, Tettix, Tragocephala.  
 Acrolophitus hirtipes, IX, 7.  
 Anabrus. See also Pterolepis.  
 Anabrus haldemanni, VII, 17.  
 Anabrus simplex, IX, 1.  
 Anisomorpha buprestoides, I, 8.  
 Bacteria. See Diapheromera.  
 Bacunculus. See Diapheromera.  
 Batrachidea (pupa) XIII, 5.  
 Batrachidea cretata, V, 8.  
 Blatta. See Ectobia Periplaneta.  
 Platamodes. Stylopyga.  
 Boopidon flavofasceatum, VIII, 10.  
 Boopidon nubilum, XIII, 10.  
 Brachyepelus magnus, VII, 11.  
 Brachyepelus virescens, IX, 3.  
 Caloptenus bivittatus, I, 16; V, 16.  
 Caloptenus differentialis, VIII, 2; IX, 4; XI, 6.  
 Caloptenus dodgei, XII, 4, 5, 9.  
 Caloptenus femur-rubrum, V, 11; VIII, 2.  
 Caloptenus griseus, XII, 14.  
 Caloptenus occidentalis, XI, 2.  
 Caloptenus spretus, VIII, 1; XIII, 15.  
 Caloptenus turnbullii, XI, 10.  
 Caloptenus viridis, XI, 3.  
 Camptonotus scudderi, VIII, 15.  
 Ceuthophilus lapidicolus, VII, 4, 5.  
 Ceuthophilus maculatus, III, 5.  
 Ceuthophilus Uhlerii, VIII, 8.  
 Chlœaltis conspersa, VI, 11; X, 12.  
 Chlœaltis viridis, X, 5.  
 Chlœaltis. See also Stenobothrus.  
 Conocephalus ensiger, IV, 12.  
 Copiphora mucronata, VII, 8; VIII, 14.  
 Copiphora. See Copiophora.  
 Cryptocercus punctulatus, VI, 20.  
 Cyrtacanthacris. See Acridium.  
 Cyrtophyllus concavus, IV, 15.  
 Daihinia brevipes, VII, 14, 15.  
 Daihinia. See Udeopsylla.  
 Decticus. See also Thamnotrizon.  
 Decticus pallidipalpis, IX, 3.  
 Diapheromera femorata, I, 7; X, 1.  
 Docophorus cygni, XII, 5.  
 Ectobia germanica, I, 4.  
 Ephippigera tschivavensis, XI, 15.  
 Ephippigera. See also Ceuthophilus.  
 Ephippitytha gracilipes, XI, 11.  
 Forficesila gigantea, X, 2.  
 Forficula. See also Labia.  
 Forficula. (?) VI, 19.  
 Gomphocerus. See Tragocephala.  
 Gryllotalpa borealis, VII, 13.  
 Gryllotalpa longipennis, I, 12.  
 Gryllus abbreviatus, VII, 17.  
 Gryllus domesticus, VI, 14.  
 Gryllus (?) formosus, IX, 5.  
 Gryllus luctuosus, IX, 10.  
 Gryllus neglectus, X, 8.  
 Gryllus pennsylvanicus, I, 13, 14.  
 Gryllus. See also Acridium, Acrolophitus, Caloptenus, CEdanthus, CEdipoda, Pyrgomorpha, Romalea.  
 Hadenæcus subterraneus, VIII, 6.  
 Haematopinus piliferus, XII, 6.  
 Haematopinus suis, XII, 4.  
 Labia, minor, X, 3.  
 Labia minuta, I, 10.  
 Lepisma saccharina, VI, 6.  
 Locusta fuliginosa, IX, 9.  
 Locusta occidentalis, XI, 16.  
 Locusta. See also Conocephalus, Gryllus, CEdipoda, Phaneroptera, Phylloptera, Stenobothrus, Xiphidium.  
 Machilis variabilis, VI, 2, 3.  
 Mantis (?) XII, 16.  
 Mantis (?) XIII, 13.  
 Mantis carolina, II, 1, 2, 3, &c.  
 Mantis missouriensis, XIII, 11.  
 Menopon pallidum, XII, 2.  
 Mesops Wyomingensis, IV, 9; XI, 8.  
 Microcentrum retinervis, IV, 3.  
 Microcentrum egg, IV, 16.  
 Nemobius exiguus, VII, 18.  
 Nemobius fasciatus, III, 9, 10.  
 Nemobius vittatus, VI, 13.  
 Nirmus argulus, XII, 1.  
 CEdanthus bipunctatus, IV, 5, 6.

- Ecanthus niveus*, IV, 1, 2.  
*Edipoda aequalis*, XIII, 8.  
     " *atrox*, VIII, 3.  
     " *carinata*, X, 7.  
     " *carolina*, V, 3.  
     " *carlingiana*, XII, 21.  
     " *cincta*, XII, 13.  
     " *coralipes*, III, 8.  
     " *discoidea*, III, 3, 7.  
     " *eucrata*, III, 2; V, 13 .VI 23.  
     " *Haldemanni*, XIII, 3.  
     " *longipennis*, XIII, 4.  
     " *maratima*, XII, 17.  
     " *marmorata*, VII, 9.  
     " *montana*, XII, 12.  
     " *pellucida*, XII, 20.  
     " *phœnicoptera*, V, 4.  
     " *rugosa*, XII, 8.  
     " *sordida*, X, 11.  
     " *sulphurea*, V, 6.  
     " *tenebrosa*, IX, 2.  
     " *trifasciata*, IX, 6.  
     " *verruculata*, X, 6.  
     " *undulata*, XII, 15.  
     " See also *Tragocephala*.  
*Opomala bivittata*, VI, 24 and 26; XI, 7.  
*Opsomala*. See *Opomala*, *Mesops* and *Pyrgomorpha*.  
*Orchelimum vulgare*, IV, 7, 8; VII, 6.  
*Orchelimum*. See also *Xiphidium*.  
*Orocharis saltator*, III, 11, 12.  
*Oxycoryphus obscurus*, XIII, 13.  
*Pediculus*. See *Phyllopterus*.  
*Periplaneta americana*, I, 2.  
*Pezotettix borealis*, VI, 16.  
     " *nebrascensis*, XIII, 2.  
     " *obesa*, XI, 13, 14.  
     " *picta*, VIII, 4.  
     " *unicolor*, XIII, 9.  
*Phalangopsis*. See *Ceuthophilus*, *Udeopsylla*.  
*Phaneroptera coloradensis*, XI, 12.  
     " *curvicauda*, VII, 2, 3, and V, 10.  
*Philopterus falcicornis*, VI, 1.  
*Phloethrips coreacea*, VI, 4.  
*Phrynotettix verruculata*, VI, 25.  
*Phylloptera* (?) egg, IV, 16.  
*Phylloptera oblongifolia*, X, 9; IV, 4; XIII, 1.  
     " *rotundifolia*, VI, 12.  
     " See also *microcentrum*.  
*Platamodes pennsylvanica*, I, 1 and 3.  
*Platyphyllum*. See *Cyrtophyllus*.  
*Podisma*. See *Pezotettix*.  
*Pterolepis minutus*, XI, 17.  
*Pterolepis*. See *Anabrus* also.  
*Podura villosa*, VI, 7.  
*Pterophylla*. See also *Cyrtophyllus*, *Orchelimum*, *Xiphidium*.  
*Pyrgomorpha brevicornis*, IV, 14.  
*Rhaphidophora*. See *Ceuthophilus*, *Hadenæcus*.  
*Romalea microptera*, III, 4.  
*Smynthurus*, VI, 7.  
*Spectrum*. See *Diapheromera*, *Anisomorpha*.  
*Stauronotus*, *Ellioti*, VIII, 11.  
*Stenobothrus admirabilis*, IV, 13; V, 14.  
     " *aequalis*, VI, 21.  
     " *curtipennis*, VI, 15; VII, 10; X, 4; XII, 18.  
     " *maculipennis*, X, 14; VI, 27.  
     " *longipennis*, V, 15.  
*Stenopelmatus talpa*, I, 10.  
     " *fasciatus*, XIII, 7.  
*Stylopyga orientalis*, I, 5, 6; VII, 12.  
*Tettigidea polymorpha*, VII, 1.  
*Tettix lateralis*, VIII, 7.  
     " *ornata*, V, 1 and 2; XII, 19.  
     " *Tetrix*, *Tettigidea*, *Batrachidea*.  
*Thamnotrizon dorsale*, I, 11.  
     " *scabralis*, XIII, 6.  
     " *trilineatus*, VIII, 5.  
*Thrips* (?) VI, 5, 9; XII, 11.  
     " *cerealum*, XII, 9, 10.  
*Tomonotus*. See *Edipoda tenebrosa*.  
*Tragocephala infuscata*, X, 8.  
     " *viridifasciata*, V, 9.  
*Trichodectes equi*, XII, 4.  
     " *latus*, VI, 8.  
     " *longicornis*, XII, 3.  
*Tridactylus terminalis*, III, 6.  
*Udeopsylla robusta*, VIII, 9.  
*Xiphidium brevipennis*, IV, 11.  
     " *fasciatum*, IV, 10.

## ALPHABETICAL LIST OF SPECIES FIGURED.

- abbreviatus Gryllus, VII, 17.  
 abbreviata Acheta. See Gryllus.  
 abortiva Chloaltis. See C. conspersa.  
 acuminata Locusta. See Conocephalus, ensiger.  
 aequalis CEdipoda, XIII, 8.  
     " Locusta. See CEdipoda.  
     " Gryllus. See " "  
     " Stenobothrus, VI, 21.  
 agilis Pterophylla. See Orchelimum vulgare.  
 alutaceum Acridium, VIII, 13; X, 13.  
 americanum Acridium, I, 15.  
     " Cyrtacanthacris. See Acridium.  
     " Gryllus. See Acridium.  
 americana Periplaneta, I, 2.  
     " Blatta. See Periplaneta.  
 americanus Gryllotalpa. See G. borealis.  
 angustifolia Phaneroptera. See P. curvicauda.  
 arenosa Tetrax. See T. Ornata.  
 argulus Nirmus, XII, 1.  
 atrox CEdipoda, VIII, 3.  
 bipunctatus CEdanthus, IV, 5, 6.  
     " Gryllus. See CEdanthus.  
 bilineata Tetrax. See T. ornata.  
 bivittatus Caloptenus, I, 16; V, 16.  
     " Gryllus. See Caloptenus.  
 bivittata Opomala, VI, 24-26; XI, 7.  
     " Acridium. See Opomala.  
     " Opsomala. See Opomala.  
 bivittatum Spectrum. See Anisomorpha bu-  
     prestoides.  
 borealis Gryllotalpa, VII, 13,  
     " Pezotettix, VI, 16.  
 brevicornis Pyrgomorpha, IV, 14,  
     " Opomala. See Pyrgomorpha.  
     " Truxalis. See Pyrgomorpha.  
 brevipennis Gryllotalpa. See G. borealis.  
     " Xiphidium, IV, 11.  
 brevipes Daihinia, VII, 14, 15.  
 buprestoides Anisomorpha, I, 8.  
     " Phasma. See Anisomorpha.  
 carinata CEdipoda, X, 7.  
 carlingiana " XII, 21.  
 carolina " V, 3.  
     " Locusta. See CEdipoda.  
 caroliniana Locusta. " "  
 carolina, Mantis II, 1, 2, 3, &c.  
 centurio Gryllus. See Romalea microptera.  
 cerealeum Thrip, XII, 9, 10.  
 cincta CEdipoda, XII, 13.  
 coloradensis Phaneroptera, XI, 12.  
 concavus Cyrtophyllus, IV, 15.  
 concavum Platyphyllum. See Cyrtophyllus.  
 concava Pterophylla. See Cyrtophyllus.  
 conspersa Chloaltis, VI, 11; X, 12.  
 corallina Locusta. See CEdipoda, phoenicoptera.  
 corallipes CEdipoda, III, 8. See also CEd Halde-  
     mannii.  
 coriacea Phleothrips, VI, 4.  
 cristata Batrachidea, V, 8.  
     " Tetrax. See Batrachidea.  
 curtipennis Stenobothrus, VI, 15; VII, 10;  
     X, 14; XII, 18.  
 curtipennis Chloaltis. See Stenobothrus.  
     " Locusta. See Stenobothrus.  
 curvicauda Phaneroptera, VII, 2, 3; V, 10.  
     " Locusta. See Phaneroptera.  
 cygni Docophorus, XII, 5.  
 damnificum Acridium. See A. rubiginosum.  
 differentialis Caloptenus, VIII, 12; IX, 4;  
     XI, 6.  
 discoidea CEdipoda, III, 7.  
 dodgei Caloptenus, XI, 4, 5, 9.  
 domesticus Gryllus, VI, 14.  
 domestica Acheta. See Gryllus.  
 dorsale Thamnotrizon, I, 11.  
 dorsalis Tetrax. See Tettix ornata.  
 elliotti Stauronotus, VIII, 11.  
 ensiger Conocephalus, IV, 12.  
 equi Trichodectes, XII, 4.  
 eucrata CEdipoda, III, 2; V, 13; VI, 23.  
     " Locusta. See CEdipoda.  
 exiguus Nemobius, VII, 18.  
     " Acheta. See Nemobius.  
 falcicornis Philopterus, VI, 1.  
 fasciatum Xiphidium, IV, 11.  
 fasciatus Nemobius, III, 9, 10,  
     " Gryllus. See Nemobius.  
     " CEdanthus. See CEd. niveus.  
     " Stenopelmatus, XIII, 7.  
 femorata Diapheromera, I, 7; X, 1.  
 femoratus Bacunculus. See Diapheromera.  
 femoratum Spectrum. See Diapheromera.  
 femoratus Caloptenus. See C. bivittatus.  
 femur-rubrum Caloptenus, V, 11; VIII, 2.  
     " Acridium. See Caloptenus.  
 flavicorne Acridium. See A. semi-rubrum.  
 flavofasciatum Boopidon, VIII, 10.  
 formosus Gryllus (?) IX, 5.  
 frontalis Acridium, XI, 1.  
     " Pezotettix, XIII, 2.  
 fuliginosa Locusta, IX, 9.  
 germanica Ectobia, I, 4.  
     " Blatta. See Ectobia.  
 gigantea Forficula, X, 2.  
 gracile Orchelimum. See Xiphidium, fasciatum.  
 gracilipes Ephippitytha, XI, 11.  
 griseus Caloptenus, XII, 14.  
 haldemannii Pterolepis. See Anabrus.  
 haldemannii Anabrus, VII, 16.  
     " CEdipoda, XIII, 3. }  
     See also CEd. corallipes. }  
 hirtipes Acrolophitus, IX, 7.  
     " Gryllus. See Acrolophitus.  
 hospes Acheta. See Nemobius fasciatus.



